APPENDIX

TO THE

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OF

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CRITICAL REVIEW.

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ART. I.—*Klopstock's Werke. Vol. I. to VI.* Leipsic. *Klopstock's Works.* 8*vo.* 2*l.* 10*s.* *Boards.* Imported by Bohn.

FRIEDERICH Gottlieb Klopstock was born in 1723 at Quedlinburg, and undertook early the Messiah, of which five books were published in 1751. The Death of Adam, and other religious tragedies, which appeared in 1767, preceded by about two years his chorus-dramas concerning Herman. His odes and hymns were collected in 1771, and his prose in 1774. From the Danish court he obtained the salary and title of counsellor of legation, less for diplomatic services, or for odes to Frederic V, than because that great minister Bernstorff considered it as the duty of Denmark to confer independence on resident genius exerted in behalf of liberty, of religion, and of morality. Klopstock died at Hamburg on the 14th of March, 1803: his funeral procession was accompanied by the most distinguished inhabitants: the non-attendance of the English resident was noticed as a singularity. Klopstock had begun, in 1798, to superintend a new and complete edition of his works. The first six volumes, which are now before us, have alone received his last corrections: they contain the odes and the Messiah. The remaining volumes will be printed from the latest editions of the other works, and are to include a biography of the author; who ranks so highly among the poets of his country, and indeed so highly among the poets of Europe, that we ought not to omit examining his productions with some formality of detail.

The serious ode, says Sulzer, the first of modern critics, is, of all forms of metrical composition, the most poetic; it is that which will bear the most uncommon turns of phrase, the bold-

est tropes, and the most dazzling imagery. It presupposes in the poet a higher degree of intellectual excitement, a more exalted, impressed, or impassioned state of mind, during the composition, than any other effort. It is contrary, however, to the nature of human feeling that intense agitation should be lasting: it follows, that no effusion, in which it is implied, should be long. The most rapturous and pathetic odes of the great masters are therefore generally short: nor is it so much from the importance of the topic, as from the genius of the artist, that they derive their interest: the latter aims, as Pindar expresses it, high as a mortal arm may hope to hurl the glittering shaft of praise. His end and purpose should however be single and definite; of his scope and intention he ought never to lose sight; brilliancy is no apology for incoherency: whatever is unconnected with the end in view, however striking, is but a splendid sin. The theory of Sulzer is, in a great degree, abstracted from the practice of Klopstock: he does not lose himself in those mazes of description, nor cluster together that bewildering variety of imagery, which usually constitutes the essence of an English ode: but his feelings are strong, his images lofty, his diction bold; and his thoughts stride as it were on stilts, so as to elude for a time the detection of their starting-place; without deviating, however, from their proper path. His manner will be best understood by a few translations: the ode to the Lake of Zurich is of the year 1750.

'Fair is the majesty of all thy works
On the green earth, O mother Nature, fair!
But fairer the glad face
Enraptur'd with their view.
Come from the vine-banks of the glittering lake—
Or—hast thou climb'd the smiling skies anew—
Come on the roseate tip
Of evening's breezy wing,
And teach my song with glee of youth to glow,
Sweet Joy, like thee—with glee of shouting youths,
Or feeling Fanny's laugh.

'Behind us far, already Uto lay,
At whose foot Zuric in the quiet vale
Feeds her free sons: behind—
Receding vine-clad hills.
Unclouded beam'd the top of silver Alps;
And warmer beat the heart of gazing youths,
And warmer to their fair
Companions spoke its glow.
And Haller's Doris sang, the pride of song;
And Hirzel's Daphne, dear to Kleist and Gleim,
And we youths sang, and felt,
As each were—Hagedorn.

'Soon the green meadow took us to the cool
And shadowy forest, which becrowns the isle.
Then cam'st thou, Joy, thou cam'st
Down in full tide to us;
Yes, goddess Joy, thyself: we felt, we clasp'd,
Best sister of Humanity, thyself;
With thy dear Innocence
Accompanied, thyself.

'Sweet thy inspiring breath, O cheerful Spring,
When the meads cradle thee, and thy soft airs
Into the hearts of youths
And hearts of virgins glide.
Thou makest Feeling conqueror. Ah! through thee
Fuller, more tremulous heaves each blooming breast;
With lips spell-freed by thee
Young Love unfaltering pleads.

'Fair gleams the wine, when to the social change
Of thought, or heart-felt pleasure, it invites;
And the Socratic cup,
With dewy roses bound,
Sheds through the bosom bliss, and wakes resolves,
Such as the drunkard knows not, proud resolves
Emboldening to despise
Whate'er the sage disowns.

'Delightful thrills against the panting heart
Fame's silver voice—and Immortality
Is a great thought, well worth
The toil of noble men.
By dint of song to live through after-times—
Often to be with Rapture's thanking tone
By name invok'd aloud,
From the mute grave invok'd—
To form the pliant heart of sons unborn—
To plant thee, Love, thee, holy Virtue, there—
Gold-heaper, is well worth
The toil of noble men.—

'But sweeter, fairer, more delightful 'tis
On a friend's arm to know one's self a friend!
Nor is the hour so spent
Unworthy heaven above.

'Full of affection, in the airy shades
Of the dim forest, and with down-cast look
Fix'd on the silver wave,
I breath'd this pious wish:
"O were ye here, who love me though afar,
Whom singly scatter'd in our country's lap,
In lucky hallow'd hour
My seeking bosom found,

Here would we build us huts of friendship, here
Together dwell for ever."—The dim wood
A shadowy Tempe seem'd;
Elysium all the vale.'

This ode will scarcely be understood entirely on a first perusal; but an attentive examination will continually unfold new and higher beauties. Nothing so difficult as to describe a landscape with effect: the province of the painter is the simultaneous appearance, that of the poet is the successive. Yet this ode is adapted to excite nearly as strong an emotion as the very scenery to which it alludes. The poet invokes as his inspiress, that Joy which results from the contemplation of nature: a lively picture of the appropriate feeling is called up by the lines—

'But fairer the glad face
Enraptur'd with their view.'

She is beckoned from the vine-banks of the glittering lake, or from the roseate tip of the evening-clouds; beautiful circumstances of the surrounding scene, to excite that thrill of exultation which is felt by the youth who shouts, or the maid who laughs in delight. The figure of mount Uto, of Zuric lurking at its foot in the green vale, are just indicated: it is only by implication that we discover that the poet and his friends are in a boat—the receding of the hills, the arrival at the isle, betray it. His companions are select; the poets Haller and Hirzel, with the Doris and Daphne they had celebrated: he describes the nameless guests, as distinguished for sensibility to picturesque beauty, by the trait—they felt, as were each a Hagedorn. Hagedorn is the Gilpin of Germany, and has published rhapsodically on painting and landscape. The feeling of delight, which at the beginning was strong, is now warmed by the sympathy of such a band to an emotion of the most powerful kind. It reminds the poet of the moments most dear to his recollection; of the spring with its thoughts of love; of wine quaffed in the society of genius; of the glow of composition which promises immortality. To these throbbings he prefers

'On a friend's arm to know one's self a friend;'

and then he lays this acme of his feeling at the foot of the scene he has undertaken to praise: the utmost wish of his very friendship is, that he and his friends might live together on the isle in Lake Zuric. There is not a useless step in the edifice, and the relievos, sculptured on each, are by a master-hand.

The Two Muses is an interesting poem, dated in 1752: we know not where to seek a metrical translation.

'I saw—tell me, was I beholding what now happens, or was I beholding futurity?—I saw with the Muse of Britain the Muse of Germany engaged in race—flying warm to the goal of coronation.

'Two goals, where the prospect terminates, bordered the career: oaks of the forest shaded the one; near to the other waved palms in the evening-shadow.

'Accustomed to contest stepped she from Albion proudly into the arena—as she stepped, when, with the Grecian muse and with her from the Capitol, she entered the lists.

'She beheld the young trembling rival; who trembled, yet with dignity; glowing roses worthy of victory streamed flaming over her cheek, and her hair flew abroad.

'Already she retained with pain in her tumultuous bosom the contracted breath; already she hung bending forward toward the goal; already the herald was lifting the trumpet, and her eyes swam in drunken joy.

'Proud of her courageous rival, prouder of herself, the lofty Britoness measured, but with noble glance, thee, Tuiskone: "Yes, by the bards, I grew up with thee in the grove of oaks:

"But a tale had reached me that thou wast no more. Pardon, O Muse, if thou beest immortal, pardon that I but now learn it. Yonder at the goal alone will I learn it.

"There it stands. But dost thou see the still further one, and its crown also? This represt courage, this proud silence, this look, which sinks fiery upon the ground, I know:

"Yet weigh once again, ere the herald sound a note dangerous to thee. Am I not she, who have measured myself with her from Thermopylæ, and with the stately one of the seven hills?"

'She spake: the earnest decisive moment drew nearer, with the herald. "I love thee," answered quick, with looks of flame, Teutona, "Britoness; I love thee to enthusiasm;

"But not warmer than immortality, and those palms: touch, if so wills thy genius, touch them before me; yet will I, when thou seizest it, seize also the crown.

"And, O how I tremble! O ye immortals, perhaps I may reach first the high goal; then, O then, may thy breath attain my loose-streaming hair!"

'The herald shrilled. They flew with eagle-speed. The wide career smoked up clouds of dust. I looked. Beyond the oak billowed yet thicker the dust, and I lost them.'

This beautiful allegory requires no illustration; but it constitutes one of the reasons for suspecting that the younger may eventually be the victorious muse. The ode entitled Recovery is dated in 1754; and is the only composition of that year: for the poet has arranged his odes in annals; and they form a sort of biographic chronicle of the persons, and incidents, that most impressed his imagination.

'Recovery, daughter of Creation too,
Though not for immortality design'd,
The Lord of life and death
Sent thee from heaven to me.
Had I not heard thy gentle tread approach,
Not heard the whisper of thy welcome voice,

Death had, with iron foot,
My chilly forehead prest.
'Tis true, I then had wander'd where the earths
Roll around suns; had stray'd along the path
Where the man'd comet soars
Beyond the armed eye;
And with the rapturous eager greet had hail'd
The inmates of those earths, and of those suns;
Had hail'd the countless host,
That throng the comet's disk;
Had ask'd with novice questions, and obtain'd
Such answers as a sage vouchsafes to youth;
Had learn'd in hours far more
Than ages here unfold!
But I had then not ended here below,
What, in the enterprising bloom of life,
Fate with no light behest
Requir'd me to begin.
Recovery, daughter of Creation too,
Though not for immortality design'd,
The Lord of life and death
Sent thee from heaven to me.'

Nothing can be more simple than the structure of this ode: it is a mere amplification or expansion of the plain propositions: *I am recovered: if I had not recovered, I should have died.* But with what precision of allegory, with what sublimity of illustration, are these propositions translated into the language of the gods! The thirteenth ode of the second book of Horace, beginning with the words

'Ille et nefasto te posuit die—'

has an analogous origin, pursues a similar train of thought, and recurs to corresponding decorations. Yet how inferior is the Roman to the German poet; not merely because the Pagan ideas of the realm of Proserpine are less sublime than those of the Christian bard; but because, among the ideas selected, so many are superfluous and derogatory. Why should Horace, when in fear of death, think of the Furies, or Prometheus, or Tantalus, or Orion? That he should hope to meet Sappho and Alcæus in Elysium was alone to the point.

Among the odes of Klopstock, one is dated in 1759, and entitled *Die Frühlings-feyer* (how may this be translated *the Holiday of Spring?*) This passes in Germany for the finest of the whole collection: it is quoted by Charlotte to Werter during the thunder-storm; and is as dear to pious sensibility as to critics of the sublime. We shall strip it of its metrical ornaments, and reduce it to verbal prose; a form of translation, which, if less gratifying to those who read for amusement, is more instructive to those who pursue information.

'Not into the ocean of all the worlds would I plunge—not hover where the first created, the glad choirs of the sons of light, adore, deeply adore, and sink in ecstasy—

'Only around the drop on the bucket—only around the earth would I hover and adore. Hallelujah! hallelujah! the drop on the bucket flowed also out of the hand of the Almighty.

'When out of the hand of the Almighty the greater earths flowed, when the streams of light rushed, and the seven stars began to be—then flowedst thou, drop, out of the hand of the Almighty.

'When a stream of light rushed, and our sun began to be—a cataract of waves of light poured, as adown the rock a storm-cloud, and girded Orion—then flowedst thou, drop, out of the hand of the Almighty.

'Who are the thousand-fold thousands, who all the myriads that inhabit and have inhabited the drop—and who am I? Hallelujah to the Creator! more than the earths which flowed, more than the seven stars which conglomerated out of beams.

'But thou, worm of spring, which, greenly-golden, art fluttering beside me, thou livest, and art perhaps, ah! not immortal?

'I went out to adore, and I weep. Forgive, forgive this tear also to the finite one, O thou who shalt be!

'Thou wilt unveil to me all doubts, thou who shalt guide me through the dark valley of death—I shall then learn whether the golden worm had a soul.

'Art thou but fashioned dust, son of May, become again fugitive dust, or whatever else the Eternal wills?

'Shed anew, mine eyes, tears of joy: thou, my harp, praise the Lord. Wreathed again with palms, wreathed is my harp. I sing the Lord. Here I stand: around me all is omnipotence, all is miracle.

'With deep awe I behold the creation; for thou, nameless one, thou madest it. Airs, which around me blow, and breathe soft coolness on my glowing forehead, you, wondrous airs, the Lord, the Infinite, sent.

'But now they become still; they scarcely breathe; the morning-sun grows sultry; clouds stream aloof; visible is he who comes—the Eternal.

'Now swoop, rush, whirl the winds: bows the wood: billows the stream. Visible as thou canst be to mortals, yes, thou art visible, thou Infinite One!

'The wood bows, the stream flees, and I fall not on my face? Lord, Lord, God merciful and gracious, thou approaching Power! have mercy on me!

'Art thou angry, O Lord, that night is thy garment? That night is blessing to the earth. Lord, thou art not angry. It comes to scatter refreshment on the strengthened corn, on the heart-gladdening grape. Father, thou art not angry.

'All is still before thee, approaching Power! round about all is still. Even the worm covered with gold looks up. It is perhaps not soulless, it is immortal.

'Ah that I could praise thee, Lord, as I would! More and more

thou revealest thyself—darker grows the night about thee—fuller of blessing.

'See ye the sign of his presence, the darting beam? Hear ye Jehovah's thunder—hear ye it—hear ye it—the shattering thunder of the Lord?

'Lord, Lord, God merciful and gracious! adored, praised, be thy holy name!

'And the storm-winds, that carry the thunder, how they roar, how with loud waves they stream athwart the forest! Now they hush. Slow wanders the black cloud.

'See ye the new sign of his presence, the darting beam? Hear ye, high in the cloud, the thunder of the Lord? It calls: Jehovah .... Jehovah .... and the struck forest smokes.

'But not our hut.——Our father bade his destroyer to pass over our hut.

'Ah! already rushes heaven and earth with the gracious rain: now is the earth (how it thirsted!) refreshed: and the heaven (how it was laden!) disburdened.

'Behold, Jehovah comes no longer in storm; in gentle pleasant murmurs comes Jehovah, and under him bends the bow of peace!'

This ode has found so many praisers, it is time it should find a critic: to the general sublimity, to the fine description of the thunder-storm, and to the truly pathetic burst—'but not our hut'—we have every wish to do justice. Yet surely the ode might have been split into two with advantage. The introductory contemplations on the origin of the planetary system, and the immortality of the soul, however lofty, moral, and fine, have very little to do with the thunder-storm, of which the description forms the business of the poem. The emerald beetle, which is employed as a connecting medium, may be capable of resurrection, and yet appear comparatively insignificant, between the creation of Orion and the burning of a forest: it borders on an instance of sinking, of the bathos. The hour of the tempest is late in the forenoon; for we are told, the morning sun grows sultry *(die morgensonne wird schwül)*, yet it closes with a rainbow, which no noon-day sun in May ever produces; the altitude at that season being too great. The harp wreathed with palms, in the psalmist's hand, shifts the scene of the poem to Palestine: but the astronomical science displayed is not there in costume. On the whole, however, this poem approaches in manner and merit the best religious odes of the Hebrews. We greatly prefer the following wish for the introduction of music among the rites of public worship: it is dated in 1767, and is entitled 'The Bands, or the Choirs.'

'Dear dream, which I must ne'er behold fulfill'd,
Thou beamy form, more fair than orient day,

Float back, and hover yet
Before my swimming sight.

'Do they wear crowns in vain, that they forbear
To realize the heavenly portraiture?
Shall marble hearse them all,
Ere the bright change be wrought?

'Hail, chosen ruler of a freer world!
For thee shall bloom the never-fading song,
Who bid'st it be. To thee
Religion's honours rise.

'Yes—could the grave allow—of thee I'd sing:
For once would Inspiration string the lyre—
The streaming tide of joy,
My pledge for loftier verse.

'Great is thy deed, my wish. He has not known
What 'tis to melt in bliss, who never felt
Devotion's raptures rise
On sacred music's wing:

'Ne'er sweetly trembled, when adoring choirs
Mingle their hallow'd songs of solemn praise;
And, at each awful pause,
Echo the heavenly bands.

'Long float around my forehead, blissful dream!
I hear a Christian people hymn their God,
And thousands kneel at once,
Jehovah, Lord, to thee.

'The people sing their Saviour, sing the Son;
Their simple song according with the heart,
Yet lofty, such as lifts
Th' aspiring soul from earth.

'On the rais'd eye-lash, on the burning cheek,
The young tear quivers; for they view the goal
Where shines the golden crown,
Where angels wave the palm.

'Hush! the clear song swells forth. Now flows along
Music, as if pour'd artless from the breast;
For so the master will'd
To lead its channel'd course.

'Deep, strong it seizes on the swelling heart,
Scorning what knows not to call down the tear,
Or shroud the soul in gloom,
Or steep in holy awe.

'Borne on the deep slow sounds a holy awe
Descends. Alternate voices sweep the dome,
Then blend their choral force,
The theme *Impending Doom*,

'Or the triumphal *Hail to him, who rose*,
While all the host of heaven o'er Sion's hill

Hover'd, and praising saw
Ascend the Lord of Life.

'One voice alone, one harp alone, begins;
But soon joins in the ever-fuller choir.
The people quake. They feel
A glow of heavenly fire.

'Joy! joy! they scarce support it. Rolls aloud
The organ's thunder—now more loud and more—
And to the shout of all
The temple trembles too.

'Enough; I sink. The wave of people bows
Before the altar—bows the front to earth;
They taste the hallow'd cup,
Devoutly, deeply, still.

'One day, when rest my bones beside a fane
Where thus assembled worshippers adore,
The conscious grave shall heave,
Its flowrets sweeter bloom,

'And on the morn that from the rock he sprang,
When panting Praise pursues his radiant way,
I'll hear—*He rose again*
Shall vibrate through the tomb.'

The words in Italics are passages from an Easter-hymn of Luther's, very popular in Germany: they might have been replaced by analogous sentences from Doddridge's *Angels, roll the rock away;* but even then, the allusion would have escaped very many readers. The ode itself is deservedly classed among the most correct and complete of Klopstock's. As a mere description of public worship accompanied with fine music, it is worthy to have been composed in the papal chapel: but it tends to realise all that it describes, and to impress strongly the belief in resurrection.

The Complaint on missing a concert, at which Windeme, a female singer of eminence in Germany, had distinguished herself, is dated in 1771. It runs thus:

'Lament with me, all ye votaries of the goddess Polyhymnia.

'Windeme sang. Bach's and Lolli's strings resounded with her song; and I was afar, and heard it not: heard not the silver tones of the strings stream, heard not, above the silver tones, Windeme's soft voice, and softer soul hover.

'An image of the sweet song arose in my fancy, which endeavoured to complete it; but it sank away: and alas in vain I call'd after the fading image "Eurydice" with regret "Eurydice."

'Lament with me, all ye votaries of the goddess Polyhymnia.'

This again displays the hand of a master. By the exquisite taste evinced in introducing in its present place a single interjection of regret, more effect is produced than by Pope's whole ode on St. Cecilia's day.

The second volume of Klopstock's odes is far inferior to the earlier: it comprises several religious poems; but more which relate to the French revolution. The topic of these is great, and well adapted for the highest flights of praise and of blame. Those which respect its commencement of course glitter with panegyric; those which respect its conclusion necessarily glare with abhorrence. The poet seems, however, to have outlived his feeling. His enthusiasm has a character of straining; his aversion, of rhetorical anxiety; he is no longer on the legs of a colossus, but in the seven-league boots of a dwarf. He caricatures his own manner, and betrays to his critic the indefensible side of his plan of composition. We will translate into verbal prose (but this is a tedious effort, for which our readers ought to be grateful) one ode, against Marat, entitled 'The New.'

'Nothing new happens under the sun? And the pursuers of that Freedom, such as history knows not, are celebrating a festival of victory, at which this daughter of heaven lies silent, in a chain, which their madness earned her, and are singing in tones, that abuse the people, a hottentotade for the feast of the sansculottes.

'"Uamp Marat, we adore thee, who exhibitest to the docile pupils of our instructors all the divinities of the seven-arm'd stream. To thee, before whom Mirabeau faded, who wilt dazzle them all out of our temple, Nuap Marat! Marat Hirop!

'Pandæmonium was the temple before thou, Marat, enteredst; but thou appearedst, and it became Pantheon. Marat Ghaip! Live the club-municipal-oligocratic-guillotine-republic! and Ghaip preserve us from hunger and plague!"

'Curses also they utter: their curses rebellow afar. "La Fayette, and you Roland, Rochefoucauld, Bailly, and you of Etampes."

'"Blessed be thou Jourdan, and Ronsin, and"——But my voice fails, and refuses to name more, or what, or how many crimes, history shall one day engrave in her brass, for the sentence of posterity.

'The living world is posterity: it sits in judgement, and judges alike, when the deed stands naked and visible. It is naked that they want scoundrels in power, because they want power; and, having used them, send them to the scaffold.

'They know their people: it wants despots and spectacles; it runs to that theatre where one murders another.

'Marat escaped the scaffold. But he is to overawe them, though dead; and therefore they make him a god.

'The vengeance taken on the citizens of Toulon is notorious. Already crowned as victims for death, they submit to foreign protection. It was no civic duty to yield to butchery: nor was suicide allowed: but life was allowed under a saving arm.

'What happened is notorious. When deputies were to go to prison; when the Rhone stream'd blood, when she (horribly stands she naked with hissing-snake-locks, blue face, and burning eyes) who was called Deliverance and was Conquest, after the

breach of the most solemn promise, lifted up her head to the terror of all, lifted it out of hell, and compelled the people to pronounce with grief the beloved name of Liberty.

'But who can recount the deeds of brazen impudence? Who would? Turn rather aside from the terrible one. Single trees conceal not the infinite forest, neither do some good actions conceal the host of black deeds.

'Whole long centuries have passed away, before the passing one brought forth this, alas! this New: before, after such fraternity, such confidential festivals, where Joy mingled in the dance of lovers and of maids, this horrible, blind, bloody abortion rolled forth under the sun, turning horror to stone, and stone to pity.

'O weep not tears too bitterly; for Liberty only wears chains, she is not fled. Do ye know on what salvation she is pondering? And do ye know whether it will not be with this as with others? "Alas, they know me not!" she thinks; "but how should distant men know who the immortals are? therefore I will send them instead of me, that they may know me, a mortal: Go; Arria, Corday."—She went.'

The liberties of language in this ode are so extraordinary, that they recall certain choruses of Aristophanes; nor are the liberties of sentiment much less harsh or extravagant: yet the genius of Klopstock is strongly shown in the main conception. The idea of composing a chorus for the apotheosis of Marat; and the determination of the goddess of liberty to send Charlotte Corday against his life, with the impressive epithet Arria, which at once indicates her self-devotion, are grand outlines; but, as is too usual, they are filled up very imperfectly. His ode-writing is a sort of short-hand poetry, the particles and terminations of idea are skipped, and the reader is left to make sense of the stimulant words. On the whole, the odes of Klopstock (for of the chorus-dramas the merit consists in the odes) constitute his strongest claims on fame. Their form has no parallel in modern literature. Klopstock was formed by the study of the Bible; and writes about modern occurrences somewhat as a Hebrew bard would have done. In force of thought and of feeling his finer rhapsodies are unequalled; far-darting thought, heart-cleaving feeling, they indeed display; but they are executed with an affected nakedness of manner, with a stripping flaying hate of unnecessary ornament, and even of necessary connexion. They resemble the dry bones of Ezekiel, risen in the attitudes of vigorous life, and on the point of springing through the gates of Paradise; but still awaiting the graceful contour and colouring of the uncreated flesh. It is the more remarkable, that Klopstock should chiefly attend to strength of outline in his odes; as his epic poetry is faulty by excess of detail, by overlabouring the minute and local ornaments.

(To be continued.)

ART. II.—*Nouveau Dictionnaire d'Histoire Naturelle appliquée aux Arts.* 8vo. Paris.

A New Dictionary of Natural History, particularly to Agriculture, to domestic and rural Œconomy. By a Society of Naturalists and Agriculturists; with Figures taken from the three Kingdoms of Nature. Vols. I.—XV. Imported by De Boffe.

WE some time since announced the publication of this very excellent Dictionary, and promised a further account of it. We had intended to wait for its completion; but the present state of public affairs prevents, in a great measure, the importation of foreign works, and renders the notice of those in our hands necessary, if we would continue to fill our Appendix with foreign literature. Perhaps also, by an early review of these volumes, we may contribute, by our commendation, to promote an English translation, which would be highly acceptable, or rather a similar work, with the improvements, which we shall soon suggest. We have hitherto received fifteen volumes, which conclude the letter N. Three others are, we know, published, and, we believe, no more. The whole will probably be comprised in about twenty-five or twenty-six volumes.

In our late historical account of Dictionaries, we omitted those on natural history, as, from the time when that article was written (for the publication was accidentally delayed), we expected that we should have already introduced the work before us. Among the Dictionaries of Natural History published in France, that of Valmont de Bomare alone merits particular notice *. This author, who, for more than thirty years, gave lectures on natural history to crowded audiences, published the first edition of his Dictionary in 1764, the second in 1768, the third in 1775, and the fourth, which now lies before us, in 1791. The last is comprised in fifteen volumes, each containing between six and seven hundred pages, and includes not only some agricultural remarks, but extensive articles on various parts of natural philosophy.

At this period, however, the interval of ten years adds greatly to the stock, and almost changes the face of science. Philosophy has within these limits been applied to the arts with more diligent attention; chemistry has assumed a new form, with numerous additions to the stock of facts; and mineralogy has obtained the appearance, and indeed the reality, of a science. If the letter and the size of the page be considered, each volume may contain one fourth more than one of Valmont de Bomare's; and should the work be comprised in twenty-five

* A Dictionary of this kind was published in French by Pomet, and another by Lemery. We have seen also a 'Dictionnaire portatif d'Histoire Naturelle,' and a 'Manuel du Naturaliste.'

volumes, the former Dictionary will be only three fifths of this before us. The substance, however, is more compact; the language less diffuse, and the style less ornamented; so that the editor probably is correct in saying—that, while not a single article contained in the former Dictionaries is omitted, one third at least is new. We shall translate that part of M. Virey's very eloquent and animated introduction, which relates to the plan of the whole work.

'Natural history is not then a science consisting only of minute details and useless inquiries, as those who are unacquainted with it have supposed. Classification, and the investigation of synonyms, are preparatory studies, not its essential parts, and are only necessary to introduce to our acquaintance the objects of the science. To give this Dictionary the advantage of a methodic treatise, we have combined the alphabetic arrangement, with an order of subordinate characters, adapted to the discovery of the object. Suppose that a person, unacquainted with natural history, should wish to know the name, the use, and the advantages of three different bodies: the articles 'Nature,' 'Natural History,' and 'organised Bodies,' will show whether one is a mineral, the other a vegetable, and the third an animal. In recurring to these secondary articles, you will find, for instance, that the first is a metal, the second a liliaceous plant, and the third a quadruped. These articles again will conduct you to the genera, and the last to the species; you will then discover that these three articles are Platina, an Amarillis, and a Zebra. This methodic analysis, at the same time, instructs the pupil in the science of nature. But to abridge these inquiries, and save the time of the more experienced naturalist, at the end of the work will be added a systematic table, pointing out the classes, orders, and genera; so that the Dictionary will also become a methodic treatise of natural history. Alphabetic arrangement has been stigmatised with the reproach of frittering science; but this disadvantage will disappear by the scientific coincidence of the different articles, and, at the same time, an analytic table of natural history will be obtained.

'Not contented with this two-fold advantage, the editor has been at the expense of procuring a very large number of good drawings and figures, which will render the most remarkable objects, described in the work, more distinct. The most exact description does not speak to the mind with the same precision as the sight; so that the assistance of the pencil or the graver is always necessary in works of natural history.

'The daily progress of the science of nature requires a complete recapitulation, in the midst of modern discoveries; as well as its application to rural and domestic economy, to the arts, to medicine, agriculture, and commerce; in short, to whatever is good, useful, and agreeable in human life. A work was wanted to examine an object in the moment, which would unite, in no very extensive space, what must otherwise be sought in numerous volumes: it was necessary to put within every one's reach the knowledge of nature, to generalise its views and point out its advantages. Such

is the design of this Dictionary. The authors have not only selected, and arranged, the ancient and modern science, but each author has preserved, in his department, the result of his own observations. The public will easily, therefore, distinguish this work from the thousand tedious compilations,—heaped together without order, without examination, without judgement,—where the scraps of the first authors are strung together with little decency or reserve. This robbery is the bane of science. When such men as Chaptal, Parmentier, Huzard, Thouin, Cels; such travellers as Sonnini, Olivier, Patrin; such observers as Latreille, Bosc, Du Tour, as well as those just mentioned; when men, so distinguished in science, members of the National Institute, or of other learned societies, associate to offer such a work to the public, it is unnecessary to discuss its merits. Each is famous for useful discoveries or important works; and each possesses a rich fund of his own. By the work the hand of a master is discovered.'

Sonnini has undertaken the history of quadrupeds and birds. In the former he has followed the arrangement, placed at the end of the natural history of quadrupeds, in his edition of Buffon; and in the latter department the method and nomenclature of Latham. Sonnini treats also of many important points of domestic economy; of whatever advantages or pleasures man derives from these classes. A long illness has prevented him from engaging in the history of fishes and reptiles; but he has undertaken the general arrangement, and the part of an editor. 'His extensive knowledge, his refined taste, the brilliant elegance of his style, and the high colouring of his language, give new charms to nature, which he paints with all her bloom and all her graces.' Virey, the author of the Introduction, modestly observes that he has been engaged in the general articles of 'Nature,' of 'Man,' of 'Animals,' of their 'Structure and their Faculties.' We ought to add, that, for an extensive comprehensive knowledge of these subjects, for a vigour of style, for precision and an expressive brevity, France has not yet, within our knowledge, produced his equal.

Parmentier has written several articles on domestic and rural economy; on the uses of different vegetables, with the method of separating from them an immense number of useful productions. Parmentier's great merit consists in adding what the ancient agriculturists and economists had taught us, which, in the range of refinement and modern improvement, has been overlooked.

The veterinary art, with the diseases of domestic animals, has been intrusted to Huzard; and the natural history of reptiles, fishes, naked moluscæ, and shells, to Bosc. He has given an accurate description of these animals, with their habits, manners, uses, &c. What relates to fishing is not for-

gotten; and with respect to shells, we find their specific names, their description, their habits; with the best figures which have been published. The same naturalist has undertaken what relates to the greater number of plants. Of these all the genera are mentioned, with the most useful, the most agreeable, and the most uncommon species. To each the trivial name of Linnæus is affixed; and the synonyms are added with accuracy. Nothing is more confused than this part of the botanic science; for the same genera are often described under different names; but in this work they are referred to the genus most generally known. To the place of each plant in the system of Linnæus, that in the system of Jussieu, in its most improved state, as published by Ventenat, is added; and the most singular and useful plants are illustrated by plates. To Bosc, also, we are to be indebted for the synoptic tables to be placed at the end of the Dictionary.

The natural history of insects is, at present, too extensive for a single artist. Olivier, who is the author of what relates to insects in the New Encyclopædia, has decribed the large class of coleoptera. The rest of the entomology is the work of Latreille. These naturalists have been particularly attentive to the distinguishing characters of the genera, and the most singular species; and they have described, with peculiar care, the varied and astonishing manners of these little animals. They have pointed out with equal anxiety the means of increasing the breed of the more useful kinds, and of destroying the noxious ones. These are not the least important objects relative to these little animals, in which nature has displayed her wisdom and magnificence, with as much power as in the larger species of living animals.

The application of chemistry to different natural productions, particularly to plants and minerals, has been the labour of Chaptal. Cels and Thouin have communicated the articles relative to the science of vegetation. To the latter we particularly owe what relates to pruning and grafting; and to Tollard, the physiology and pathology of plants with their diseases, the method of cure, and several useful articles of gardening. The larger and more important articles respecting the vegetable kingdom are the work of Du Tour. He has described 300 genera and more than 1300 species, though he has only mentioned the most useful and the most pleasing. His style is concise, elegant, and studied. The article of 'oak' comprises an abstract of a very complete history of the genus. The component parts of vegetables have been composed by the same author. The term 'botany' contains an abstract of the science in general; and under 'plant' we find the nomenclature and the description of the parts of vegetables. M. Du Tour,

having cultivated the most useful plants at St. Domingo, has given very valuable accounts of the sugar-cane, the indigo, coffee, and cotton trees.

Mineralogy has been intrusted to Patrin, a naturalist, who has not studied in cabinets only, but has observed nature in her most secret recesses, and explored with particular attention the highest mountains of central Asia. The theory of the earth, some parts of astronomy, meteorology, the history of volcanoes, the formation of mountains, the uses of different earths and stones, the working of mines, the strata and metallic veins, &c. are explained with singular ability and precision.

To supply any deficiency that might remain in the accounts of quadrupeds and birds, MM. Desmarest and Vieillot have taken some share in these departments; and the natural philosophy has been the subject of M. Libes' attention. These different authors furnish a constellation of talents and information, that we have seldom met in the execution of a similar work. The articles are the unaltered productions of the different contributors; each of whom subscribes the initials of his name to his own papers, and holds himself responsible for his opinions. Yet even these advantages, brilliant as they appear, have their drawbacks. Science is unfortunately divided by party; and the work in this way is not a whole. While the authors describe the labours of others, and are engaged in the detail of facts, all is well. But in their opinions we perceive some little disagreement. Yet this discordance is not striking, nor always important, except in a few instances where similar subjects are treated by different authors. It would have been better, however, had each yielded a little to the judgement and sagacity of the editor, so as to have given a more perfect coincidence, and a more complete connexion, to the scattered limbs of the work. This was the improvement which we hinted at, if ever a translation should be attempted.

The detail just given is, in a great degree, furnished by the introduction to these volumes. The commendations of each author and his labours are, indeed, a little too far strained; yet, on the whole, the work is truly valuable. The articles in general, though short, are satisfactory: they are short, because they admit no extraneous matter. The subject is explained concisely, and the paper concluded when the requisite information is given. We can scarcely discover a superfluous word even to round a sentence. The plates are not numerous. About ten decorate and illustrate every volume, and each contains several figures. The objects are of course small; but they are peculiarly distinct, and represent very clearly the most essential parts.

In the first and second volumes we noticed several important and valuable articles. Those on 'trees' ('arbre'), 'animal,' and

'atmosphere,' appeared very clear and satisfactory. The latter is by Patrin; and what relates to the diffusion of minute ova in the atmosphere is new and interesting.

'If I have stopped a few moments, to prove that each stratum of the atmosphere possesses a specific determined weight, which will not allow it to support any bodies not perfectly resembling it in this respect, it is because this circumstance contributes to resolve a question long debated, and, as it is thought, decided, but in a manner which appears to me not adopted by nature. I speak of the supposed eggs of animalcules, called infusory, and the pretended seeds of mould, and other organised microscopic bodies supposed to be so copiously disseminated in the atmosphere, that the smallest particle of air is richly provided with them.

'To admit this supposition, we must suppose that all these little bodies produce seeds and eggs, whose specific gravity is infinitely various, not only in different but in the same species; which is contrary to every kind of analogy. I have made numerous experiments, which prove that the same animal and vegetable substances produce the same kind of animals, and the same species of mucor, though placed at different elevations, and even at the height of some hundreds of toises.

'All the substances tried, had been boiled more than an hour, to destroy the germs and seeds which they might previously contain. I chose the time when the atmosphere was most calm, and I took every precaution to avoid the invasion of these supposed aërial germs. I can also add, that, in my voyage from Petersburg to France, I repeated the same experiments on the open sea. I observed that the substances, which I left freely exposed to the external air, were covered with moisture, and filled with animals, much more rapidly at sea than on land. The experiments were made on the poop, that nothing might be suspected to come from the internal parts of the ship.

'We must suppose then, that the marine atmosphere was full of seeds and eggs, of every species of animalcule, and mould; for the substances employed offered in profusion the riches of the vegetable and the animal kingdoms. This appears, I own, a little miraculous.

'The supposed pre-existence however of all germs must include properties still more wonderful than their existence: first, the capacity of dilating or compressing themselves, so as to be always in equilibrium with every stratum of atmosphere; next, to be so universally diffused that no portion of air can be found free from them, either on land or sea; thirdly, to be incorruptible, incapable of submersion, unaffected by all the vicissitudes of season or climate, since in every spot, and at every part of the year, they are ready to germinate; fourthly, to have so much understanding, as to penetrate only the matter capable of developing and nourishing them, instead of plunging blindly into the bitter sea, a single drop of which is sufficient to prevent their animation, as I have frequently experienced; fifthly, to be invisible, though so numerously disseminated in the atmosphere, since, notwithstanding their inconceivable

multitude, not one is ever discovered on the stand of the microscope: yet they are soon seen, when engendered in the substances employed; sixthly, to resist the action of fire, and to be, as a celebrated naturalist has said, of the nature of porcelain; seventhly,.... But ten pages would not be sufficient to point out all the inconsistencies which attend the supposed pre-existence of these pretended embryos. What then must we conclude on a subject so difficult to explain? We may, I think, admit, without inconvenience, the opinion of those good people, who suppose that what we call matter, and are so little acquainted with, enjoys the property of assuming the forms which we style organic. But, say others, there are respectable personages, who give an odious name to those who admit this opinion. This is to me astonishing: for it appears, on the contrary, that we pay homage to ETERNAL WISDOM, by thinking that it gives existence to substances, whose ultimate molecules are active, animated, and capable of reuniting, under determined forms, according to the circumstances in which they are placed, rather than that its gloomy labours have formed them inert. The principle of life can make nothing of death: a weak and limited agent could only be reduced to that state. A feeble mortal, like Prometheus, can only form an inanimate statue; but the Divinity appeared, and the statue received the spark of life.'

On this subject we shall make but few remarks. The arguments are strong and almost unanswerable; but those which oppose the existence of the ova in the substances in which the future animals appear, are not equally so. If, however, cheese can breed mites, the marsh might breed a hippopotamus, and the woods elephants: the utmost confusion would follow, since nature proceeds from the most minute to the largest animal, by slow and imperceptible degrees; and all the inconveniences of equivocal generation would ensue. We must admit, that the more diminutive the molecules of matter are, the more activity they appear to exert: but this is far from allowing the extensive conclusion which M. Patrin (the author) requires. The folly of mankind has, indeed, branded speculatists of this kind with the name of deists. If however they be deists, such were Newton, Boyle and Evelyn, the wisest and best of mankind. Let us again select from an article of Patrin, a continuation of the subject. This author is an observer of singular acuteness and originality.

'MINERAL ASSIMILATION, a property which minerals possess, in the bosom of the earth, to appropriate and assimilate to themselves substances with which they are united, in circumstances favourable to such an union.

'Though the knowledge of this property seems to be the true basis of the natural history of the earth, and its mineral productions, yet Buffon and, with him, the greater number of naturalists have confined this faculty to animals and vegetables. They have

said, that these are the only beings formed of living matter, and that mineral substances are composed only of dead matter.

'But, if we reflect that, after the analyses of modern chemistry, organised beings are resolved into elements perfectly similar to those of the mineral kingdom, and that, in each, we find always hydrogen, azote, carbon and oxygen combined with simple earths and metallic molecules, we shall doubtless acknowledge that nothing is dead, *for what is dead can never live again.* Many facts also prove, that organised beings grow only by assimilating the same elementary substances, which are styled dead, but which appear to live after their assimilation, that is, when they are combined with such as already composed the organised whole.'

In this argument M. Patrin escapes from the question. It is not pretended, that every portion of an organised body is living: the nourishment only gives bulk and stability to the animated parts. The germ, the embryo, contain these, probably without admixture, while nourishment expands and supports them. His idea also, that these minuter particles possess 'instinct', is probably visionary; yet, if the name be changed, the principle may remain, and *elective* attraction will convey a meaning not very different; for choice implies volition.

'From these different considerations,' he adds, 'it seems that there is no real difference between the elementary molecules of organised bodies, and those which compose mineral substances, which are organised in their own way, from the stone, which we call brute, because we no longer see the relations, which connected it with the rock, from which it is separated, to the beautiful mineral vegetation, called *flos ferri*, which so much resembles marine productions, and which appears to be one of the intermediate productions, which nature has placed on the confines of her different kingdoms, to connect them with each other, and to preserve the unity of her domain.

'All those who have frequented the interior of the earth, have remarked that the hardest and most compact mineral bodies are penetrated by a fugacious fluid, which seems to circulate in them without cessation; and analogy leads us to believe that the molecules of this fluid, or those with which it is charged, combine and identify with the bodies in which it circulates; and consequently that mineral assimilation does not greatly differ from what we find in the other kingdoms.'

From this assimilation our author explains different strata, metallic veins, &c. The idea is ingenious, and the more we reflect on it, the less improbable it appears. To establish it, however, more varied and minute inquiries are requisite.

We mentioned, in the former part of the present article, that some contradictions occur from collateral subjects being intrusted to different authors. We indeed suspected that such might

be found, when we perceived that each author considered himself accountable for his own articles only. Patrin's objections to the general dispersion of seeds in the atmosphere have had no influence on Tollard; who, in the article 'flower,' vol. viii. has adopted the old opinion. We shall select, as a further specimen, the description of the pistil from the labours of this naturalist.

'The pistils are the female parts of plants. They are as numerous as the seeds with which they correspond; for, though some plants have but one style and several seeds, if we examine the former with care, we shall find it composed of a number of pieces equal to the seeds which terminate in the ovary. The number of stigmata, on the contrary, is always equal to the cells contained in the ovarium. The pistil is parenchymatous in its whole length. We find pores in it that exhale a viscous fluid, which moistens it at every period, and it is the only part of the plant not provided with the epidermis; as if nature avoided covering this glandular body with teguments, that impregnation from the fecundating dust might not be impeded. The ovary is the lower portion of the pistil, and in the greater number of plants is divided into different cells, which contain the rudiments of the seeds. The style connects the stigma with the ovary, and is composed of as many vessels as the latter contains seeds, with which each is connected. Physiologists have not yet shown that the style is tubulated. Bonnet has seen in the orange lily, and the linden-tree, an opening between the parts of the stigma which passed into the pistil, and even extended to the seeds, sufficient to give a passage to the fecundating pollen. At the moment of fecundation, this opening, which performs the office of a *vas deferens*, dilates like a funnel, and the orgasm of the organs ceases: it disappears by the closing of the parts of the stigma. Thus the ovary, the style and the stigma, which when continued forms the pistil, are formed of moveable pieces, which in the moment of fecundation enjoy a sufficient spring to open and shut a seminiferous canal, continued from the stigma to the ovary. Linnæus suspected such a canal, without having demonstrated its mechanism. Spallanzani has seen it; but he remarks that he has seldom been able to follow it beyond the middle of the style; and that in some plants he has not been able to see it with even the assistance of the best instruments. Hill declares, that he has seen it through its whole course with the microscope; and Adanson, having discovered the tube only in some styles, supposes that, where it is wanting, impregnation is carried on by the tracheæ, which pass from the stigma to the ovary. But it is, in other views, a nice question to determine whether these tracheæ are themselves tubes.

'Linnæus *(Sponsalia Plantarum)* thinks that, however minute the tubes of the style may be, they exist in every plant. This opinion is very probable. It is supposed that, if there be fecundating particles, so minute, that we cannot perceive or determine their forms with the best glasses; there must exist *vasa deferentia*, invisible to our eyes, (even with the aid of optics,) which conduct the pollen

from the stigmata to the ovaries, by as many canals as there are seeds to fertilise. It is not the only part of physiology which eludes glasses. Senebier supposes, that, in the impervious styles, the communication of the pollen takes place through the porous substance which composes them, by the same mechanism by which, in Bulliard's experiments, coloured water ascended through every part of the style of the hemerocalus: but gradual and successive infiltration of the vegetable semen appears to us improbable. In the imperious function of reproduction, every step is rapid, and this law is common to all living bodies. The motions so strongly marked in the sexual parts of many plants at the moment of fecundation, the opinion of Linnæus, the inquiries of Bonnet, and the microscopic discoveries of Hill, lead us to think, that the fecundating pollen is carried from the stigma to the ovary by a continuous canal, often invisible, but susceptible of dilation at the moment of the sexual orgasm. The style is not a part essentially necessary to vegetable life: many plants do not possess it, and the fecundation takes place directly from the stigma to the ovary.'

This translation is almost literal; and we have rendered it in this manner, *verbum verbo*, to give a specimen of the compressed language of the original. We may add, that the description of this part of the flower fills a page and a half of the original.

We have already spoken in commendation of the article on the 'atmosphere,' but forgot to observe, that the author strongly supports the opinion, frequently introduced in this journal, that evaporation is owing to the decomposition of water, and rain to its reformation from its elements.

When we have received the whole of the work, we shall return to it; and conclude the present article with an extract of a different kind. We shall select it from the account of the whale (*baleine*).

In this article, the author gives an excellent description of those gigantic animals, speaks of their food, their amours, &c. He next points out the places where they are found, and their migrations; describes their manners, their habits, and their contests with their enemies. He then calls the attention to the boldness and industry of those men who first attempted to combat with, and conquer, these animals, viz. the Biscayans. He engages in some degree in the political history of this fishery, so interesting to commerce, and speaks in the following terms of the Dutch, who disputed these advantages with the Biscayans, and of us, who have taken them from both.

'The Dutch, a nation patient, œconomical, obstinate, capable of the strongest application and perseverance, soon emulated and then rivalled the Biscayans. Opening their way to the Frozen Sea, they quickly obtained a superiority in the whale-fishery. In 1612 the Dutch first equipped vessels for this pursuit. There soon however

appeared, on the ocean, that haughty nation which, surrounded by seas, is born to dispute their dominion with all those who are rivals of its power. England could not permit the Dutch to enrich themselves by the whale-fishery, without partaking its advantages. She therefore employed all her powers to possess, exclusively, this branch of commerce, and to render the whole of Europe tributary to her industry.'

ART. III.—*Histoire du Bas-Empire, depuis Constantin jusqu'à la Prise de Constantinople en* 1453; *par J. C. Royou.* 4 *Vols.* 8*vo.* Paris.

History of the Lower Empire, from the Reign of Constantine to the Taking of Constantinople in 1453. *By J. C. Royou, &c.*

A FRENCHMAN, named Le Beau, began a voluminous and turgid history of the Lower Empire, as it has been strangely called; that is, of the Roman empire subsequent to the transfer of the main seat of government to Constantinople. That history was continued by another hand, and completed in twenty-five volumes, which embraced the whole period from the accession of the first Constantine, about the year 300, to the death of the last Constantine, in 1453. These twenty-five volumes have now been reduced, by a judicious epitomiser, to four; and form a convenient and sufficiently ample narrative of a period, which Gibbon has illustrated by his reflexions and his research.

The Byzantine annals describe the foundation of Constantinople; the establishment, the controversies, and the schisms of Christianity; the division of the monarchy; the disorders of military despotism; the seditions of a factious metropolis; the invasions and settlements of the barbarians of Germany and Scythia; the institutions of the civil law; the character and religion of Mahomet; the crusades of the Latins in the East; the conquests of the Saracens and Turks; and the final subversion of the Greek empire. These events are narrated without the interruption of references, or the ornaments of rhetorical diction: the critic and the literary lounger may lament; but he who reads in order to recollect, and not in order to investigate, will find himself a gainer by this expeditious perspicuity of relation.

History ought not to attempt to tell every thing that has happened in the world; but only every thing *interesting* that has happened in it. Whatever can neither instruct nor amuse, may be dropped without hesitation. Time is daily compiling new materials for the annalist; and from accumulation of contiguous events, the necessity of abbreviating those at a distance is increased.

The growth of an empire is, to most readers, a more interesting topic than its decline and fall: this is in human nature: on youth and spring we fix a more willing regard than on the maturity of manhood or of autumn. But for him who loves to reflect, or who desires to be useful, it is more necessary to observe the gradations of decay than the expansions of vigour. The art of preserving is more valuable and more difficult than that of acquiring. Conquerors are numerous; and the evils they inflict are great. Law-givers are scarce; and the benefits they bestow are lasting. In the list of generals, how few want skill in their profession! In the list of kings, how few have attained any splendor of excellence! By attending to the causes of the decline of states, the more inconvenient symptoms of debility may long be delayed, and perhaps prevented: it seems however to be the lot of all human societies at length to dissolve.

The history of ancient Constantinople is commonly thought to offer only scenes of intrigue; sovereigns lazily slumbering under the canopy, and all that monotonous sloth of debility, which usually affects a dynasty, in proportion as the succession becomes indisputable. In a few of its princes, however, have sparkled some remnants of that vigorous genius, which shone steadily in the brighter times of the Roman republic. The last emperor of Byzantium buried himself gloriously under the ruins of the throne, and died worthy of being the last of the Romans.

Not many reflexions or observations on the related events are here interspersed; but the general turn of such as occur is unprejudiced, respectable, and candid. 'The rulers of the world,' says this author in his preface, 'are, in my judgement, entitled to indulgent criticism: I am become convinced of it, since I have seen their most inexorable censors incapable of managing tolerably a municipality.'

The English reader will chiefly wish to know how much more, or less, of information he may expect to find in this history than in that of Gibbon. We will translate the whole reign of Leo the philosopher, which is comprised within narrower limits in the forty-eighth chapter of the History of the Decline and Fall of the Roman Empire.

'Leo, called the philosopher, would have been little remembered, had he not signalised his reign by a great monument of legislation. But his name, essentially connected with the Basilica, is placed by history beside that of Justinian. Enlightened law-givers are the benefactors of human society, while conquerors are mostly but its scourges.

'Leo acceded in 886; he had a brother Alexander, who, like himself, was associated during infancy to the title of emperor; but who derived from his titular sovereignty no other advantage than that of delivering himself up to pleasure without reserve, and that of

observing his name beside his brother's on the decrees and coins of the state. Leo ruled alone; and flattery decorated him with the epithet of *the philosopher*, earned by a very ordinary taste for literature, and for the scholastic jargon of his times. As soon as he became master, he was desirous of being revenged on the perfidy of Santabaren, and began by displacing Photius his protector. For the patriarch at Constantinople was so considerable a person, that, had he remained in office, he might have sheltered Santabaren from the resentment even of his sovereign. A general and a postmaster of the empire appeared in the great church, read in the presence of a numerous audience an accusation against Photius, declared him to have forfeited his dignity, and conducted him into a monastery of the city. They induced the clergy to appoint for his successor, Stephen, a brother of the emperor, then sixteen years of age. This scrupulous young prelate, desirous of overcoming the importunate ardours of his youth, took refrigeratory medicines, which brought him to an untimely grave. Photius lived many years in his convent. He had been anathematised by nine popes, and had given occasion to a schism, which lasted thirty years. Santabaren was scourged, blinded, and banished. The irregular punishment of these prelates, toward whom no legal formalities were observed, attracted the pity of the people toward them: even Leo appeared to repent his cruelty: he recalled Santabaren, and settled on him an annuity.

'A war was begun in 889 by the Bulgarians, who, tired of a repose they had observed for generations, attacked and defeated the Greeks in Macedonia. The king of Bulgaria, Symeon, cut off the noses of his prisoners, and sent them back to Constantinople in this condition. Leo, very indignant at the affront, sent across the Danube for Hungarians to march into Bulgaria. The proper appellation of these Huns was Magiars: they had formerly come from the east, where they were settled near the sources of the Jaik; whether they staid behind when their countrymen first crossed the Volga, or whether they returned thither after the death of Attila. Expelled from these regions by their neighbours the Tatzinaces, some withdrew south-eastward to Circassia, others passed the Borysthenes, crossed Moldavia, which they afterwards occupied, and entered Transylvania. It formed a part of the Great Moravia, which then comprehended what is now called, after these barbarians, Hungary. They are said, on their arrival, to have been a nation of 216,000 men, beside women and children. Ferocious, faithless, without religion, they lived on horseback and in motion, fed by hunting, fishing, and honey, and by the raw flesh and milk of their cattle. Their waggons were their only houses, hides and fleeces their only garments; they bore half-naked a rigorous climate. Their prisoners they usually slaughtered, eating their hearts and drinking their blood. To give no hold to their enemies, they shaved their heads. They were fierce, seditious, stirring, pitiless to the slightest faults, impetuous, yet gloomy and silent. The women scarred the faces of the children at their birth, to accustom them not to mind the pain or appearance of a wound. They were taught to manage horses, and shoot with the bow. These nations

used the sword but little: they did not encamp behind intrenchments: till the day of battle, the different families and tribes lived apart. Instead of dividing in battle, like the Greeks, into three columns, they formed but one mass, separated by small intervals, and a reserve. They loved to fight at a distance, and to employ the stratagems of war. Obstinate in pursuit, they would hunt down the very last of their enemies. Such were the dangerous auxiliaries to whom Leo applied. They at first beat the Bulgarians. But Leo having suffered himself to be amused by proposals of peace from Symeon, and having imprudently withdrawn his army, the vanquished made an irruption among the Hungarians, and put every thing to fire and sword. The emperor, intimidated by the misfortune of his new allies, made a shameful peace with the Bulgarians. These soon grew tired of it, and exterminated a Greek army, which comprehended many Asiatic and European troops.

'To console himself for these reverses, the emperor turned his attention to the improvement of legislation. From Justinian to Phocas, Latin had been the language of the courts of justice. From the time of Phocas, it was Greek. The laws of Justinian continued in use; they had been translated into Greek in the time of that emperor, or shortly after. The constitutions of the succeeding princes were successively added. The Roman jurisprudence having lost ground continually to the time of Basil, that prince thought fit to form a new body of law. He caused to be drawn up an abridgement of jurisprudence called the *Procheiron*, or Manual, divided into forty books. Leo retouched it, and gave it a better form. He moreover published 113 *novels* (Mr. Gibbon prefers this equivocal word to the barbarous substantive *novellæ*) and epitomes of the edicts; but his principal work was the compilation of the Basilica in sixty books: those of Justinian formed the basis. Leo added the laws of the successors of that prince, retrenching whatever was superfluous, contradictory, or abolished by usage. These were called the First Basilicals, because others appeared afterwards. Constantine Porphyrogenitus, the son of Leo, corrected them: this second edition was called the Later Basilicals; a name which answers to royal edicts, the emperors being often called *basileis* in Greek, or kings. The collection of Justinian was forgotten: the new body of law became the rule of the tribunals, until the end of the empire. While in the West jurisprudence was buried in the darkness of barbarism, it was preserved in the East with the wrecks of ancient literature, so that there was hardly any instruction but at Constantinople.

'The unwarlike taste of Leo sensibly encouraged the enemies of the empire. While he was employing his soldiers to build churches, the Bulgarians recommenced their intrusions, and the Saracens attacked any city which offered a prospect of pillage. Those of Africa, after having taken one of the strongest places in Sicily, passed into Italy, where they seized on Reggio and Cosenza. Those of Cilicia made themselves masters of Seleucia on the shore of the Cilician sea, of the island Lemnos, and of Demetrias in Thessaly. They made a more important expedition in attacking Thessalonica, which, next to Constantinople, was then the first city

of the empire. Situate at the bottom of a gulf which bore its name, the beauty and convenience of its harbour had attracted the riches of Asia, of Greece, and of the Archipelagian islands. The river Axius, the greatest in Macedonia, enters the sea in its neighbourhood, and brought from the interior the productions of a busy agriculture. This opulence tempted the Saracens, who employed a new method to scale the place. They fastened their vessels two together, and built between a high platform of masts and beams, from which they marched level on to the rampart. The town was taken by assault. The Saracens, after much bloodshed, carried off 22000 captives, and so prodigious a booty, that the warehouses of Tripoli in Syria, whither they carried it, were insufficient to contain their plunder. Such were the natural advantages of Thessalonica, that, a few years after this disaster, all traces of it had disappeared, and it seemed to have entirely resumed its former lustre and prosperity.

'A fourth marriage of the emperor appeared very scandalous to the empire. This voluptuous prince had at first a wise and virtuous wife; and at the same time a mistress, as corrupt as she was beautiful, who poisoned her husband in order to belong more entirely to the emperor. Leo did not scruple to confer on her the title of empress, after the death of his first wife. This union, and a third, which the emperor contracted, were of short duration. Another woman, named Zoë, drew his affection; but he chose to wait till she had given him a pledge of her fertility, before he would take her to wife. She was four years before she had a male child. A few days after, the emperor married her, and the child was baptised Constantine. The patriarch Nicolas refused the nuptial benediction, excommunicated the clerk who had performed the ceremony, and interdicted to the emperor admission to church. The prince came, but through a private door. The Greek clergy, who allowed their priesthood to live with wives married before ordination, had objections to second and abhorrence for fourth marriages. Neither the dignity of emperor, nor the interest of the empire, which required that no spot should attach to the birth of the heir apparent, could influence this harsh and inflexible prelate. He was deposed, and suppler bishops were found to authorise by dispensations the marriage of the prince.

'Some years after, Leo was attacked with a mortal disease. It was customary at the beginning of Lent for the emperors to preach a sermon to the senate and court. Leo, faint with suffering, could only pronounce these few words: "Remember a prince, who governed you with mildness; and show your gratitude to my son and to my wife." They promised it collectively, and retired in tears. Leo appointed for his successor his brother Alexander, with the request, or condition, that he would appoint the infant Constantine.

'Leo, though mild, was pursued by conspiracy. An assassin was on the point of killing him in the church with a stick: the torments inflicted on this malefactor did not obtain the name of any suborner, or accomplice. The abridger of the Universal History attributes this crime to the fanatical impression of displeasure excited by the fourth marriage; but it is anterior to that incident by three years.

'Leo has bequeathed to us one very curious work, his Tactics. Maizeroy translated it into French, with remarks. This treatise mentions many particulars which can be collected from no other source. Every morning and evening a public prayer was made in the camp: on the eve of a battle, a priest went round to sprinkle the army with holy water. Leo relates without any mark of disapprobation the custom of poisoning the arrows. Many other military and religious works of this prince still exist in the libraries of the Vatican, and of Florence; among them a letter in the episcopal style, addressed to the people, and exhorting them to live a Christian life. Among his many monasteries, Leo founded one for eunuchs only. At this period every thing, even devotion, had an affected and singular character.'

It will on comparison immediately be perceived, that the philosophic reflexions of Mr. Gibbon do not atone for his barrenness of fact; and that this history of the Greek empire may still be read with instruction, after perusing the declamatory but not critical abridgement of the same period, contained in the History of the Decline and Fall.

The great lesson, which the reigns of the Byzantine princes are adapted to teach and to inforce, is the importance of a total abstinence in the magistrate from theological interference and dogmatism. Let him strictly respect the political equality of religious sects, and not unlock the gates of advancement to the select or the alternate favourites of controversy. Whatever implies in the magistrate an opinion, ought to be shunned as a badge of partiality and a harbinger of injustice. For want of this precaution, the Constantinopolitan crown became the football of patriarchs and priests; and was tossed to new dynasties, and upstarts, not for the imperial virtues of military excellence or legislative wisdom, but for preaching to seditious attroopments about the fractions of the trinity, or heading the statuaries in riots of the iconoclasts. The emperors, who lent an ear to the alarms and apprehensions of their clergy, became eventually the puppets of their patriarchs, and sullied their hands in the innocent blood of the zealous but ignorant pupils of fanaticism. Their empire weakened by division, their sway reviled by the persecuted with hereditary obstinacy of discontent, the intolerant sovereigns have all descended with unfavourable tinges to posterity, and miss their natural chance for a lenient civility of estimate. A real feebleness of mind is however implied in the magistrate's anxiety about symbolic formulas; so true is the observation of an historian of our own times:—*religiosa dissidia vix unquam nisi sub imbecilli imperio floruisse deprehendes.*

ART. IV.—*Histoire Naturelle des Poissons, &c.* Paris. 1803.

The Natural History of Fishes, dedicated to Anne Caroline la Cépède, by M. la Cépède. Vol. V. 4to. Imported by De Boffe.

WE at last arrive at the conclusion of this work, which has engaged so much of our attention. When we entered on this task, our systematic knowledge of these animals was imperfect, and the species described comparatively few. Artedi and Linnæus had only sketched the outline of a system, which future naturalists were destined to fill up. Bloch, in his splendid work, which is within the reach of few philosophers, has described and engraved only 523 species. Linnæus, in his last edition of the System of Nature, described 479, which Gmelin has nearly doubled, having added 355; so that the whole known, before the present publication, was 834 species. This work, however, offers us not less than 1463. Of these, 339 had not been noticed by any naturalist; and 629 had not appeared in the most approved systems. Some of these may seem to be varieties only; but from Commerson's MSS., and the acquisitions of the numerous scientific travellers within the last fifteen years, the real species now added must be numerous.

Prefixed to this volume is a 'Discourse on Fishing, on the Knowledge of fossile Fishes, and some general Properties of Fishes.' We have already had occasion to observe, that M. la Cépède's knowledge of these animals is limited, and scarcely extends beyond what an observation of their manners in a glass vase would supply; yet we meet in this discourse with some facts, apparently important, which we shall shortly notice. We have not often enlarged on these parts of the work; for, in general,

'Declamation roars where Science sleeps.'

'Fishing,' observes M. la Cépède, 'preceded the cultivation of the land, and is contemporary with hunting; but there is this difference between hunting and fishing, that the latter is suitable to the most civilised nations, and that, so far from opposing the progress of agriculture, commerce, and industry, it multiplies their best consequences.'

We have selected this as a specimen of those sounding sentences, those *nugæ canoræ*, which abound in the dissertations to each volume, without the slightest support from history or fact. Fishing has been chiefly the resource of nations the *least* civilised, and the most indigent; employed from absolute necessity only, by those to whom hunting and agriculture were unknown; and, by others, to avoid the most lingering death. The Ichthyophagi were a nation despised even in early times. The Egyptians abhorred fishes; and we recollect only two passages in the Odyssey, where the crew of Ulysses ate these animals, *viz.*

Δ 369, M 330; and, in each, extreme hunger is alleged as the apology, and in the same words.

'Mother of navigation, it (fishing) prospers with this first exertion of human intellect. In proportion as science renders the admirable art of constructing and directing vessels more perfect, the art of fishing multiplies its instruments, lengthens its nets, invents new means of success; connects a greater number of men; penetrates the most profound abysses; draws the objects of its unvaried pursuit from their most secret recesses, and pursues them to the extremity of the globe. For these reasons, perhaps within a few ages only, has man been able to display, on all the rivers and seas in the world, this great art of concerting his plans, uniting his efforts, varying his attacks, dividing his labours, combining his operations, arranging his seasons, reaching distant seas, and catching his prey, by conquering, if I may so speak, seasons and climates, unchained winds, and overwhelming waves.'

This description is splendid, though scarcely applicable to *any* fishery. No fishes are pursued to the *deepest* recesses of the ocean; and in the whale-fishery, of which the author seems to have had an obscure view, the only one carried on at a distance from the shore, the animal is caught when it comes to the surface for a supply of air.

M. la Cépède, after glancing at the numbers of the inhabitants of the waters, and the natural mummies, *viz.* the fossil remains of these animals, discovered in different rocks, next describes the skeletons of fish of various orders. In this part we meet with some novelty, which we shall select.

'Before we leave the skeletons of the thoracic fishes, we shall point out a singular articulation, that seems to have escaped every osteologist, which I have discovered and explained in my class, at the National Museum, since the year 1795.

'It may be called the *annular articulation.* It is, in fact, composed of two complete bony rings, that play in each other, like the links of a chain. Every osteologist will perceive, that the link which moves in the other must be formed in a particular manner; and this may perhaps throw a new light on the general question, respecting the increase of bony organs.

'This kind of articulation belongs to bones of about a decimeter in length, which have been often observed in large collections of natural history, distantly resembling a flattened head, somewhat round, and terminating in a long curved beak, which has been styled the jaw-bone of a large fish.

'We have found that these bones were only large fins*, proper to support the first radii, the pointed radii of the anal fin of many thoracic fishes, particularly in some chætodons, acanthinions, and

* *Aileron*, the word here employed, is not properly the fin, but the process of bone to which the fin is affixed. We have no equivalent English term.

acanthures. The lower portion of the annular articulation is large, very flat, rounded at the bottom, on the top, and in front. This part, which is somewhat sphæroidal, is terminated, on the top of its posterior side, by an apophysis twice as long as the flattened sphæroid, very slender and strait, convex in the front, a little flattened behind, compressed at its extremity, and raised almost vertically.

'The flattened and irregular sphæroid is covered with indentations and ribs which converge at its lowest part; and it is in this lowest part, situated almost under the long apophysis, thas we discover the true rings. Each of these rings supports one of the first sharp radii of the anal fin, whose perforated basis forms another ring, connected with one of those of the flattened sphæroid.'

In a former introductory discourse, our author had supposed that the gills of fishes decomposed water, as the lungs of animals decompose air. In this case the oxygen was, he thinks, absorbed, and the hydrogen conveyed to the air-bladder; an opinion not wholly improbable, since hydrogen had been found in the air-bladder, and fishes have lived in water deprived of air by boiling, provided the water was frequently renewed. This fine-spun system is however of little value, since the air-bladders of those fishes which yielded hydrogen, when examined in a fresher state, have afforded only common air; and we know that water, deprived of air, soon again absorbs it from the atmosphere. A more obvious and a less objectionable idea is one that we have formerly stated, *viz.* that the air-bladder, besides its obvious use, is a reservoir to supply pure air in emergencies. Of course, its contents must be, in different circumstances, various, as the oxygen is soon absorbed; for atmospheric air is not a chemical union of its component parts, but only a firm attractive cohesion. The author who supplied M. la Cépède with one part of his argument, *viz.* M. de Buniva of Turin, speaks of fishes deriving their nourishment from the infusory animals of water. This is however an uncertain speculation. Fishes require a very small proportion of nourishment, or their digestion is rapid, since their stomachs are usually found empty after death. We speak not of carnivorous fishes, but of those whose food is chiefly of the vegetable kind. In a vase, they scarcely ever seem to feed; but this is a forced state, an unnatural situation. In rivers they find weeds and worms in profusion, though they apparently remain, often many days, in an inactive, torpid state; the water supplying, as in vegetables, the little nourishment they require. Insects form apparently their luxuries, for which they risk their lives, and often pay the forfeit.

The greater part of the lives of fishes, though we know little of their economy, seems to be spent at the bottom of the sea, and of the deepest rivers. In the bays, and on the banks, they only appear when a genial sun calls them to their sports, when nature imperiously commands them to seek a place for their

future offspring, or when the overflowing myriads require a more extensive range in other seas, and find a destructive tyrant in man, or some monarch of the ocean. The bottom of the sea, like the internal parts of the earth, has a uniform temperature. This is the residence of fishes in the coldest seasons, where they perhaps remain like the animals that lie torpid during the winter. Many saline substances destroy them: a larger proportion of common salt has this effect; and M. de Buniva tells us, that a small portion of sulphur, on the other hand, will preserve their lives, when the water is infected with the most noxious gases. The conclusion of this discourse excites feelings too painful to permit our enlarging. The author takes his leave of the world of science, since all his earthly enjoyments are destroyed by the loss of an amiable wife. He has embalmed her name and her memory by distinguishing three species under the appellation of Anna Carolina:—this volume is also dedicated to her memory.

'DEDICATION.
'To the mild Benevolence,
'The profound Sensibility, the interesting Grace,
'The superior Genius
'Of Anne Caroline Hubert Jubé la Cépède,
'The Homage
'Of Love, Gratitude, and eternal Regret.'

The 149th genus, the first of the present volume, is a new one from Commerson, the cirrhitus; and the only species is distinguished by the trivial name of maculatus. It greatly resembles the thoracic fishes, particularly the holocentri, and should rank the first among the abdominales. The fasciated cheilodactylus is also new, and found among the acquisitions from Holland.

The cobites are well known: the C. barbatula and tænia occur in Gmelin. The C. tricirrhata is new, and discovered by M. Noel in the running waters near Rouen. The C. fossilis of Linnæus is removed to a separate genus, under the same trivial name; and the C. anableps forms also another genus, under the appellation of anableps Surinamensis. The eye of this animal is peculiar, and has been noticed by us in our review of the second volume of the Memoirs of the Institute, where it was described by the present author. Two other species of mud-fishes are separated from the genus cobitis, under the name of fundalus, *viz.* the C. heteroclita and Japonica of Linnæus.

The colubrina Chinensis, a new fish, for which M. la Cépède has formed a particular genus, is described from a beautiful Chinese drawing found among the plunder of Holland. It is properly arranged in this group from its serpentiform appearance.

The next genus is the amia, of which also there is a single species, *viz.* the A. calva of Linnæus. The butyrinus bananus is from Commerson, greatly resembling the A. calva, but distinguished by the length of its head. The hautin of Rondelet forms also a distinct genus, from its possessing three dorsal fins, with but one anal. The former is rare: and with only a single anal fin, the peculiarity is singular. It is styled tripteronotus hautin. The ompok siluroides is also new, from the Dutch collection.

The siluri are numerous, and have not yet been properly distinguished, though Bloch has made some ineffectual attempts to reduce them to order. We shall select, at one view, our author's arrangement, in nearly his own words; but in some parts shorten, and in others add to them from a different portion of the section.

The siluri, as combined by preceding naturalists, form a too numerous and undistinguished group. Bloch has divided them into three genera; but his arrangement is neither sufficiently minute, nor scientific: to which may be added, that numerous new genera will not submit to his classification. All the siluri have the head covered with large and hard scales, or with a slimy skin: their mouth is situated at the extremity of their muzzle; their jaws are furnished with whiskers; and the first ray of their pectoral fins, and that of their dorsal fin, are hard, strong, and often serrated: one of these has at least these characters. Their body is large: a mucous substance penetrates almost all their integuments. But the author considers, as true siluri, those only whose dorsal fin is very short and single, which, in this and other respects, resemble so much the glanis, constantly distinguished as siluri. In the second genus, he places the fishes, which, like the charmuth of the Nile, have a single but very long dorsal fin, from this called macropteronotus. For the third, he reserves the species called by naturalists the silurus electricus, which has one dorsal fin only; but this fin is merely an adipose excrescence, which rises near the caudal. This has the singular appellation of malacopterurus, from μαλακος soft, πτερον fin, and ουρα tail. The fourth genus contains the bagrus, and those which, like this fish, have the dorsal fin supported by radii, and a second dorsal wholly adipose, styled pimelodes, fatty. The fifth comprises those, which, independently of a radiated dorsal, and a second dorsal, simply fatty, have a more or less considerable part of their sides furnished with a sort of armour formed of laminæ, large, hard, and often stuck with small points. The name is doras, from the Greek term of a coat of mail. In the sixth genus are the species, discovered by Commerson, which, offering two dorsal fins supported by radii, have their sides raised, longitudinally, by laminæ or distinct scales: this genus is styled pogonathus, from the bearded

jaw. The seventh contains the calichthus, and all those fishes with large laminæ on their sides, two fins on their backs, radii on each of their fins, but with one only on the second dorsal: it is styled cataphractus, an appellation not new. The eighth genus contains those whose long tails are terminated by a second dorsal and an anal fin, both confounded with the caudal. This genus is named plotos, from the readiness with which, by the assistance of these powerful organs, they swim. In the ninth genus are arranged those fishes which have two dorsal fins, the second fatty, without whiskers (ageneiosis, without a beard). To the tenth belong the species which have two dorsal fins, each fortified by radii; the first radius of the first fin very long, strong, and indented; the muzzle, with respect to the other dimensions, very long; and the jaws without a beard. The appellation is from macroramphosis, a long muzzle. In the eleventh are those species which, not having received any whiskers, raise on their backs two fins, supported by radii more or less numerous, and, being without teeth, have their gills covered with opercula armed with one or more points: centranodon, from κεντρον a prickle, and ανοδους without teeth.

We need not enlarge farther on these eleven genera, which chiefly contain the siluri of Linnæus and Gmelin. The loricaria comprise only the L. cataphracta of Linnæus; the L. plecostomus being referred to a new genus, the hypostomus, with the trivial name of guacari. Two other new genera follow, each containing only a single species—*viz.* the corydoras Geoffroy, from the Dutch *spoils*; and the tachysurus Sinensis, a fish described from some Chinese drawings, resembling greatly the siluri and their congeneres.

The genus salmo is limited by our author, and some of its species referred to different genera. The description of the manners of this fish is more full and more correct than usual. Two circumstances are, however, omitted—the apparent constancy with which the same fishes return to the same rivers; and, we may add, the different seasons in which they invariably frequent neighbouring rivers. The first has been ascertained by marking the fish, when caught, and again setting it at liberty. Another singularity is, that they are infested by a pulex only when they are in season. In this, the lobster agrees with the salmon: the red lice which infest the gills of this fish are an invariable proof of its goodness and high flavour. Four new species are added: one from Commerson.

The salmo eperlanus of Linnæus (the smelt), the S. saurus and fœtens, are numbered among the osmeri, in a separate genus, in which we find two other species from Bloch, and one from Plumier.

The coregonus comprehends the S. lavaretus, with the variety B., pidschian, schokur, nasus, thymallus, vimba, migrato-

rius Mulleri, autumnalis, albula, peled, maræna, marænula, wartmanni, oxyrynchus, leucichthys, L. with the coregonus var. B. from Artedi, and another species from Plumier's drawings. The characinus includes also many species arranged under the genus salmo by Linnæus—*viz.* the S. argenteus, dentex, gibbosus, notatus, bimaculatus, immaculatus, cyprinoides, Niloticus, Ægyptius, pulverulentus, and anostomus. To this genus, five other species are added from Bloch. The S. rhombeus of L. forms a separate genus, serrasalmus, with the trivial name of rhomboides. It forms a connecting link between the salmon and the clupei.

The elops comprehends but one species, *viz.* the saurus. It resembles the salmon, but is separated from it even by Linnæus. The megalops filamentosus resembles the former, but is perhaps properly separated. It is described from the MSS. of Commerson. The notocanthus nasus, from Bloch, resembles the trichuri, except that it has ventral fins.

The esox (the pike) is a well known genus. The E. Americanus of our author is the E. lucius Americanus var. B. of Linnæus. The other species of the Swedish naturalist, arranged under the genus esox, are the E. belone, argenteus, marginatus, Brasiliensis, gymnocephalus, and viridis; though the trivial names are not always the same. The E. chirocentrus is described from Commerson.

The other Linnæan species of esox are divided among different genera: the genus synodus, for instance, contains the E. synodus and vulpes. The synodus Malabaricus is the E. Malabaricus of Bloch. The E. Chinensis and macrocephalus are from the Dutch plunder.

The sphyrenæ are separated from the pikes, chiefly on account of their two dorsal fins. This genus contains the E. sphyrena of L. The S. Chinensis is from the Dutch collection; and three other species from Plumier.

The genus lepisosteus contains also some of the esoces, properly separated from the others, as they are defended by scaly armour like the crocodile. The L. gavial is the esox osseus L.; the L. robolo, his E. Chilensis. The L. spatula, a new species, is described from an individual in the national museum.

The polypterus bichir was described by Geoffroy, who found it in the Nile when he accompanied 'the *French* hero and his admirable army' to Egypt. It resembles the L. gavial, but is strikingly distinguished from it. The scomber esox Camperii resembles so strongly the esoces and scombri, as almost to appear an artificial composition.

The fistularia petimba (the tobacco-pipe fish) is the F. tabacaria of Linnæus; and the aulostomus Chinensis, improperly separated from the genus fistularia, is the F. Chinensis L. The solenostomus paradoxus, an animal of a similar appearance, yet

joins the distinguishing characters of so many other fishes, that, unless it formed a separate genus, we might be at a loss in what group to arrange it.

The silver fishes, the ornaments of our vases, follow; but this tribe would lead us too far. We must conclude the work in another article.

(To be continued.)

ART. V.—*Pierres tombées du Ciel: présentant la Marche et l'Etat actuel de la Science, &c.* 8vo. Paris.

Stones fallen from the Clouds: containing the Progress and present State of our Knowledge respecting Thunder-stones, Showers of Stones, &c.; many unpublished Observations of MM. Pictet, Sage, Darcet, and Vauquelin; with a Theory on the Formation of these Stones. By J. Izarn, M. D. &c. &c. Imported by De Boffe.

WE some time since promised to return to this subject with all the facts before us; and we now examine the present work, not only to include the author's observations, but to collect the different facts and explanations of other observers, and bring them into one view. We are sorry to add, that they are not yet sufficiently numerous, nor are the circumstances so well ascertained, as to enable us to offer any probable or consistent theory.

We remember a story of this kind among the legends of our nursery, told with all the circumstances of the present narratives, excepting only that the thunderbolt, as it was called, was said to have been of gold. The composition of the present stones is not less singular, though different. Such are, nevertheless, the prejudices against similar tales, that, when Pictet read a memoir on this subject in the National Institute, it was so unfavourably received that it required all his resolution to finish it. In the spring, however, of 1803, an explosion occurred at Aisle, which was heard through a space of thirty leagues. A small cloud was observed, which discharged a considerable number of mineral substances in the space of two leagues. Few were found, though it was said the number discharged amounted to two or three thousand. The size was various; from seventeen pounds and a half, ten pounds and a half, and seven pounds, to a drachm. In short, the fact is unquestionable. Stones have fallen from the atmosphere; and it is more singular, though equally true, that these stones have been of a uniform nature, consisting chiefly of nickel and iron—the latter generally in a metallic state; a combination, of which no instance has been discovered in the minerals of this globe. Various facts of this kind are recorded in our own Transactions, and have been already the subject of our notice, though treated by us with a

degree of what we now think to have been unmerited scepticism. The only narrative from a person present near the spot at the time of such an event, we shall transcribe from the Journal de Physique.

'Last Tuesday, 6 Floreal, between one and and two in the afternoon, we were alarmed by a rolling sound like thunder. We were surprised, on going out, to see the sky clear, with the exception of some slight clouds which did not obscure the sun: it seemed the noise of a coach or the neighbouring fire. We were then in the meadow, and saw the neighbouring inhabitants at their windows, or in the gardens, inquiring what cloud that was, passing from south to north, which occasioned such a noise; though the cloud seemed, in no respect, extraordinary. Each, according to his abilities, attempted to explain the mystery, though no one was successful. But the surprise was greater when we found that very large stones had fallen from this cloud, and in great numbers; among which were some of ten, eleven, and even seventeen pounds weight.

'Those who were witnesses of an event so extraordinary, explained it in the following manner:—They heard a sound like that of a cannon; then a double stroke louder than the first, followed by a rolling which lasted near ten minutes, the same which we heard, accompanied by a hissing caused by the stones as they were opposed in their fall by different currents of air, and which is not improbable in so sudden a dilatation. Nothing was heard afterwards; but it was remarked, that, before the burst, the fowls seemed afraid, and that the cows bellowed violently. All the peasants were terrified, particularly the women, who thought the end of the world at hand.'

One of these stones fell near M. Bois de la Ville; another was taken up by a person who saw it fall, and who found it so warm as to burn his hand; some by the violence of the fall were buried deep in the earth. The stones were black externally, and greyish internally, with shining metallic particles. In short, the stones which have fallen from the clouds, whether in England, in India, in France, or in Italy, have been uniform in their appearance and in their constituent parts.

Another instance, recorded in one of the foreign journals, occurred near Sales, in March 1798. A globe of fire was seen at Lyons, on Mount Cenis, and burst at Ville Franche. It was seen also by Pictet at Geneva, and in different towns as far as Berne: its altitude must therefore have been considerable. The weather was calm and clear; and the fall was witnessed by three persons who found the stone the next morning at the depth of eighteen inches, which weighed about twenty pounds. The appearance and constituent parts of this stone do not greatly differ, except in their proportions, from the others formerly analysed.

When we examine the various instances of these events, they may, in different views, be arranged in two classes—*viz.*

the stones that have fallen from a clear or a slightly-clouded atmosphere, or in thunder. One instance occurred of a fall of stones about eighteen hours after the eruption of Vesuvius, at Sienne, in June 1794; yet it happened that these stones resembled all the others that have fallen from the atmosphere, and, in no respect, the usual discharges from that volcano. In another view, these phænomena will admit of a similar division; they are either stones, such as have been analysed by Count Bournon and Mr. Howard, or they are masses of malleable iron. One instance only of the latter appears well authenticated; but it is so firmly established as to lead to the suspicion that all the isolated masses of malleable iron may have had the same origin. If masses of 250 pounds weight have fallen from the clouds, there is nothing to impede our belief of masses weighing as many tons being produced from the same source. All the stones of the first class, we have said, have fallen in a serene sky; and they have fallen, not vertically, but in an inclined direction. They have been attended with noise like the explosion of cannon and musquetry; so that there is reason to suspect that the other class, attended with thunder, may have only been ushered in with a similar sound. They are all calcined only on the surface, or at the edges of the cracks in the mass; which shows that the heat they have experienced, if considerable, has not continued long. It is equally evident that they are not thrown out of any volcano on this planet; for the masses are uniform and similar, the same in different and distant countries, scarcely ever in volcanic regions, and have experienced only a superficial heat; for the forms are often irregular.

The solutions offered of these phænomena have been various. Chladni, one of the first philosophical inquirers on this subject, supposed, that, in the formation of the planets, some substances remained which could not be incorporated with them, and that these have continued to revolve round some planet, till, by the diminution of the projectile force, or increase of the centripetal, they have fallen into it. This doctrine is too absurd for a remark.

Another idea, which we have thought less improbable than any other, is that these substances may have been projected by some lunar volcano. La Place, the Newton of modern times, found that a body thrown from the moon, with a velocity six times greater than a ball of a twenty-four-pounder impelled by a charge of twelve pounds of powder, might reach the earth from the moon. His object, he observes, was only to prove the possibility of the action of this cause. Yet, if this were the *real* cause, stones might fall, at any time, without the concurrence of a meteor; the fall would be attended with no explosion; the body would not be heated. To this may be replied, that the body may have revolved round the earth without its being

visible, and been precipitated only by meeting with a meteor which destroyed the balance of the centripetal and centrifugal forces; or that the sulphur, which forms a part of all these masses, was not inflamed till it reached our atmosphere, which occasioned the explosion and the fall. Neither idea is very improbable, since the moon has either a very rare or no atmosphere.

A third opinion is that of Humbolt, who supposes the constituent parts of these stones volatilised by means of hydrogenous gas, which, taking fire in the upper regions of the atmosphere, occasioned the re-union of the particles, previously in a state of mutual repulsion. To this, however, we may reply, that there is not the slightest evidence of some of the ingredients of these stones being volatilised by this gas, particularly the flint, which usually forms near one half of the mass. There is still less evidence of these substances being exclusively volatilised in unvaried proportions; yet both must be admitted, when the steady uniform composition of the stones is considered.

A fourth opinion supposes that the elements of these substances are only volatilised in the atmosphere, and that they unite by affinity of composition; in other words, that they are formed by combinations which take place in the air. Every antecedent objection, however, applies to this also. It is, in every view, improbable. The size of some of the masses presents a strong argument against the opinion: that which fell, for instance, near Ensheim, weighed three hundred pounds. The heat may probably have been acquired by its rapid passage through the air. Mollet, a physician at Lyons, compressed the air in a condensing machine very considerably, and, opening the valve, placed combustible bodies in the way of the rapid current which escaped. He tells us that they were inflamed. Others, who tried the same experiment, did not succeed; but Pictet repeated it, and found the thermometer rise from 18° to 33°.

M. Patrin seises these facts, as a support of his own theory of volcanoes. 'This is founded' (we now employ his own language) 'on the persuasion I feel, that the substances which feed them, and those that they eject, are furnished by the fluids of the atmosphere, which, after having circulated through the upper strata of the earth, where they are variously modified and combined, escape under the form of inflammable metallic and stony substances, which contribute to produce all the phænomena of volcanoes.'

To return, however, to Mr. Izarn, whom we have not followed minutely, because we have attempted to combine, in as short a compass as was in our power, whatever had been said by different authors on the subject. The first part of his work contains the different facts that have been recorded, to which we have somewhat added; and the second, the arguments to establish the real occurrence of such events. On these it is not

now necessary to enlarge further. However singular the circumstances may appear, the facts are undoubted.

Our author's opinion we shall shortly premise, and then examine his arguments more minutely. He supposes that these stones are formed of different gases; and attempts to prove it from the violent detonation that attends them, from the superficial combustion and oxydation, as well as from the heat observed in them when they fall.

After noticing the two principal causes of detonation,—*viz.* the sudden change from a solid to a gaseous state, or the contrary, he adds,

'These two causes have been long since described; but they are not the only ones. The discharge of a vast mass electrified to its maximum, on an equal mass not electrified though very attractive, produces also a detonation; and, in this case, neither gas nor a solid substance is formed; but only a violent separation of the non-conducting medium, by the passage of the electric fluid, takes place—a passage immediately followed by the return of the fluid separated. If this passage be made by a conductor, it is not less rapid; but there is no detonation, because the separation is insensible.'

He afterwards endeavours to prove, that a non-conducting medium is not peculiar to the passage of the electric fluid; as oil and water, glass and mercury, are equally non-conductors to each other: in short, every substance is such to that with which it will not unite. The appearances we can observe in fluids; but while we must suppose similar non-conducting powers in the particles of different airs, the effects are not within the reach of our senses. When, however, the non-conducting medium in the air, supposed to be thus constituted, is broken, detonation must also, in our author's opinion, ensue. M. Izarn next endeavours to show, that, in these phænomena, neither the sound nor the light is electrical, but a re-union of substances bursting through a non-conducting medium.

The atmosphere he considers as a vast ocean, composed of numerous particles of various substances so minutely divided as to rise to the superior regions; and he thinks 'that the bodies which we consider as simple, and which, in the view of nature, are only the most intimate compounds, are owing to combinations of principles, in an extreme state of division.' Thus nature, in M. Izarn's opinion, employs gaseous substances in forming the most solid bodies; and he thinks that we are far from having arrived at the most simple elements.

The author next examines the state of our knowledge respecting light and heat; and endeavours to show that we unnecessarily infer the existence of violent heat from a bright light; and we are still at a greater distance from truth, by re-

ferring such phænomena exclusively to electricity. The consequences he deduces from these considerations are the following:

'First; In the aërial mass which surrounds our globe, there must be different aëriform substances unknown to us, the greater number of which are in spherical masses, from pressure in every direction, isolated from each other. Secondly, That there may be, in the atmosphere, detonations not the result of electrical phænomena, and which have no connexion with them. Thirdly, That we must not attribute all the luminous meteors to the combustion of hydrogen, since they only prove a separation of light, which may be owing to a change in the state of every aërial substance. Lastly, That the separation of light does not necessarily include that of caloric; and that, from its brilliancy, we must not expect to find a cause of fusion or vitrification.'

Such is the foundation of our author's theory. Two circumstances, however, oppose it: one is, that these bodies, though they affect a rounded form, are sometimes irregular and sometimes angular: another objection is, that their combination is uniform. M. Izarn must prove, that either these given ingredients are alone present in the atmosphere, or that these only are capable of forming concretions. Either principle is untenable. Indeed, he tacitly admits the force of the latter, by adding, that, unless in such proportions as admit of concretion, a shower of fire will be the only observable phænomenon. Is the author ready to contend that no other principles will concrete into masses; or that these principles will concrete, from their elements, exclusively in the air, and not in the earth, whence these elements are confessedly derived? In short, difficulties attend so strongly every theory, that we must wait in silent attention for additional facts and further information. Our author's principle is apparently well founded. The elements of all bodies may exist in the state of gas. Even quicksilver will assume an aërial form in the upper part of the Torricellian vacuum; for globules of this metal are condensed beyond the spot where the column has ever reached. Flint, we know, may be carried into the atmosphere, combined with the fluor acid gas. Sulphur more certainly combines with hydrogenous gas; and Sage has found iron in plants which have been cautiously guarded from the access of any body that could contain that metal. The two circumstances already stated, however, oppose this system—the uniformity of the masses, and their dissimilarity to every combination found on the earth. Are they then projected from a lunar volcano? Why not?

ART. VI.—*Annales du Muséum d'Histoire Naturelle, &c.* Paris. *Annals of the Museum of Natural History. By the Professors of that Establishment. With Plates. Vol. I. 4to.* Imported by De Boffe.

WE have long been anxious to introduce these annals more fully to our readers than we could possibly do in the short account of our Retrospect. We were, however, restrained by the conclusion of our Series, since, to have begun the review of a work, to whose successive volumes we should probably again and again return, would have been equally unaccommodating to our old and our new friends.

The idea of this publication arose from the frequent meeting of the professors of the Museum, and from the advantages of the establishment, to which every new object in natural history is brought. The names of Haüy in mineralogy; of Faujas de St. Fond in geology; of Fourcroy in chemistry; of Brougniart in chemistry as connected with the arts; of Des Fontaines and Jussieu in botany; of Thouin in the cultivation and naturalisation of vegetables; of Geoffroy, La Cépède, and La Marck, in different branches of zoölogy; of Portal, Mertrud, and Cuvier, in human and comparative anatomy; and Vanspaëndonk in the art of drawing, are a sufficient recommendation of any work. The volumes, so far as we have seen the successive numbers—for a fatal war deprives us, in a great degree, of the later literary information of the continent—are interesting, and, in many parts, important. The printing is neatly executed; the plates numerous and elegant. It will be impossible to follow each successive article closely: we shall therefore give a general account of the contents, and enlarge a little on what may appear peculiarly interesting.

The first article contains 'An historical Account of the Museum. By M. Jussieu.'—This history is continued in different numbers. We shall not notice it in its successive appearances, but only remark, from it, that the institution of botanical gardens is not of a very early date. The first establishment was at Padua, in 1540; those of Bologna and Pisa succeeded in 1547; that of Montpelier, in 1598; of Leyden, in 1660. A garden was established in Paris, on a small scale, the property of an individual, in 1597; but the present national establishment dates only from 1635.

'A Memoir on Tarrass, or the volcanic Tufa in the Neighbourhood of Andernach. By Faujas de St. Fond.'—This tarrass occurs in strata of thirty feet in thickness. The country around is formed of pumice; and, in the pumice, some pieces of charcoal have been discovered. In the same light ashes are traced some particles of a silvery grey schistus, and some brilliant particles of a beautiful blue stone, the pleonast of Haüy, to which this colour, as well as a black hue, must be

added among 'the accidents of light,' the mineralogical language for colours, phosphorescence, &c.

'Observations on Arsenicated Copper. By Haüy.'—These observations are in a great measure a translation from Count Bournon's and M. Chevenix's Papers in the Philosophical Transactions, with some inconsiderable additions, which need not detain us.

'Analysis of the Alum of Hall, in Saxony. By A. F. Fourcroy.'—This alum is of a singular purity, containing only about .024 of sulfat of lime; yet there is great reason to suppose it artificial, washed down from the refuse of an ancient laboratory in the neighbourhood.

'A Description of the Genus Tithonia. By Des Fontaines.'—This flower was produced from some seeds sent from La Vera Cruz in 1778; but it appears to be distinguished by no great beauty, and is wholly useless. Its trivial name is tagetiflora, from the resemblance of its flowers to those of the tagetes.

'Memoir on the Plant called by Botanists Erica Daboecia, and on the Necessity of referring it to a different Genus and another Family. By Jussieu.'—This plant, first considered as an erica, was afterwards transferred to the andromedæ. Those, however, who carefully study natural affinities, will soon find, from the singular structure of the capsule, that it must be removed to a different family. Dr. Smith, from a similar structure, arranged his new genus, menzieza, among the rhodoraceæ of Ventenat. The present plant may be referred to the same genus, with the trivial name of polifolia, from the resemblance of its leaves to those of the teucrium polium.

'The Natural History and Anatomical Description of a new Genus of Fishes, from the Nile, styled Polypterus. By E. Geoffroy.'—This is the fish which we have pointed out as new, in the present number, from La Cépède's fifth volume. The description now before us is more full than that of La Cépède; and it indeed appears a singular animal—a stranger, in our author's language, in his own family. We have, indeed, from this description, many doubts of the propriety of its arrangement; but this is not a place for such disquisitions. We shall select a short passage from the conclusion of the article:—

'The genus which the bichir most nearly resembles, is the esox (the pike). It has also some resemblance to the cayman, and to the scaly eel. This is not, however, a consideration of sufficient importance to induce us to arrange the bichir among the pikes, since it differs from them, and all the other abdominales, by the most essential organs. It is the only one of this order which has the fins placed at the extremity of arms; the only one in which the radii branchiostegi are supplied by a bony plate; the only one which has spiracles furnished with valves, to close

them externally—characters in which it resembles the whale. It is, also, the only animal whose dorsal line is furnished through its whole length with little fins; the only one, the first ray of whose fins is a needle with a double point; the only one, the apophyses of whose vertebræ sustain, without any intermediate support, the bony rays of the dorsal fins; the only animal which has a tail so short as to be almost useless in swimming; lastly, the only one which, by the structure of its organs of digestion, forms a shade between the abdominal and the cartilaginous fishes.'

For these reasons our author has placed it in a distinct genus.

'Memoir on the Animal of the Lingula Anatina (Lamarck). By G. Cuvier.'—To class testaceous animals from the shells, was the result of indolence, or of attention otherwise directed. Linnæus, whose chief study was engaged in the vegetable kingdom, the source of his greatest pleasure and his anticipated fame, gave only an outline of the other branches of natural history, and particularly of conchology; an outline which has not yet been properly filled up, though deserving unwearied attention—we mean, the arrangement of shells independent of the animals. In a zoölogical work, the animals claim the chief regard; and the present mollusca is a proof of the necessity of studying the inhabitant, independently of his covering. As the shells are scarce, and not furnished with teeth, Linnæus, from seeing a single one, did not suspect it to be a bivalve, but called it unguis, in which Gmelin with some hesitation joins. Others have thought it the shelly operculum of some snail; others again, aware of its being a bivalve, have referred it to the pinnæ. Bruguiere, who perceived that the two valves were attached to a membranous pedicle, like the terebatulæ, formed a new genus, in which this animal was the only species. But, after all these difficulties, and all these uncertainties, the shell was described and represented by Seba in the sixteenth plate of his third volume. This animal is in many respects curious: its shells are neither opened by a relaxation of its muscles, nor by the elasticity of its dorsal membrane, but by the action of its two arms. The structure of this mollusca is in every respect so singular, as to justify the author in forming a fourth family, characterised by the absence of head and feet; two fleshy ciliated arms, which surround the mouth; the position and form of its gills. The patella anomala of Muller, the anemonies of Linnæus, and some of the terebatulæ, are apparently similar animals.

'Accounts of the Cultivation of the Spice-trees introduced into Cayenne. By Joseph Martin, Botanist,' &c.

'Catalogue of uncommon Seeds, sent in the Year 1800 from the French Botanic Garden near Charleston in South Carolina, to the Botanic Garden at Paris. By F. A. Michaux.'

'Departmental Correspondence of the Lower Meuse on a fossil Elephant's Tooth.'—This tooth was found at Hasselt, near Maestricht, and is chiefly singular as in this department are found fossil remains of crocodiles of an unknown species, tortoises, and animals of very distant seas.

'On the Number, the Nature, the distinguishing Characters of the different Materials which form Calculi Bezoards, and the various animal Concretions. By A. F. Fourcroy.'—The particular subject of this memoir we have already had occasion to notice; but we may add, that it is illustrated by a coloured plate, which represents the appearance and structure of the different calculi with great clearness and accuracy. The colours are apparently laid on on the plate, and at once printed—a mode of representing coloured objects with great accuracy, but, from its difficulty and precarious success, little practised. The following observations are, we believe, new:—

'*Animal Bezoardic Resin.* HISTORY. These are animal concretions, in the whole or in part resinous, which have been hitherto described with little precision, and chiefly on account of supposed virtues almost miraculous. It was more than a century since, that the advantages of these bezoardic medicines were so much celebrated. Such are the calculi, seemingly biliary or intestinal, formerly and still called oriental bezoars. They must not be confounded with the hard occidental bezoars, of an earthy appearance, formed of carbonat of lime and phosphat of lime, or of ammoniaco-magnesian phosphat.'

We shall, in a future Appendix, resume the subject.

'Memoir on the new Varieties of carbonated Lime, with some Observations on the Errors arising from trusting to the Use of the Goniometer for the Description of Crystals. By Haüy.'

'Rare Plants which flowered in the Year 1800 in the Gardens or the Conservatories of the Museum. By Des Fontaines.'—This account is continued in the succeeding numbers, but we shall not again notice the articles.

'Description of a new Species of Scorzonera. By Des Fontaines.'—The S. aspera, from the Levant, introduced into the green-house in the year 1799, by MM. Olivier and Brugniere, propagated by seed.

'Memoir on the School of Fruit-trees established in the National Garden of Plants at Paris. By A. Thouin.'—This excellent institution is designed to preserve the best species of fruit-trees; to describe, and to give them fixed, judicious appellations. Our best kinds of fruits, for want of a similar establishment, begin to decay, and will be in time forgotten.

'Observations on the Birds arranged under the Genus Tangara, with a Description of a new Species found in Africa. By E. M. Daudin.'—Nature, as usual, sports with systematic distinctions. The passeres have thin short tarsi; three separate

toes in front, and one behind; with a bill somewhat short and conical. The tangara, however, partakes of the properties of the two neighbouring families: for the conical bill, towards the extremity of the upper mandible, is somewhat serrated, like the turdi; and a few species have the conical bill lengthened, like some of the crows. Naturalists have consequently mixed other families with the tangaras, only on account of the conical elongated bill, or the small indentation. Indeed, this genus was established by Linnæus, to comprehend the species less carefully observed, between the picæ and the passeres. Our author concludes, from his observations, that the tangaras should be referred to the grossbeaks; at least, such should be the conduct of naturalists respecting many of the species: and Brisson has already shown the example. The species before us was found at Malimba, a city of Congo, on the coast of Africa, by Perrein. They are seen at Malimba in autumn, and show that the species of this genus are not confined to the New World.

'A Description of the Achirus Barbatus, a Species of Pleuronectes discovered by Gronou. By E. Geoffroy.'—The pleuronectes, a genus which contains the plaice, the sole, the turbot, &c., is singular from having the two eyes on the upper surface, and for the immense bulk of the tail. They swim, however, in an oblique situation, on the side, the under side forming the less angle; and their motion is unequal and irregular. The achiri, according to La Cépède, are the pleuronectes without the pectoral fins.

'Memoir on the Bulla Aperta Linn., Bullæa of Lamarck.'—M. Lamarck, it is observed, 'has, with great propriety, divided into separate genera those univalves whose shell is concealed in the flesh without its appearing externally. The same principle guided Linnæus, when he placed among the naked molluscæ, the aplysia, and even the cuttle-fish and slugs.—The latter have, in the flesh of the back, a true shell, very small and thin, but of the same substance and texture as common shells. The horny lamina which is in the substance of the cloak of the aplysia, is a shell, though so thin as to be flexible. Thence to the spear of the ink-fish, there is only a single step; and the bone of the cuttle-fish itself, as we shall find, does not differ so much as might be supposed from common shells. Yet, if these parts, to an eye accustomed to the progressive shades of comparative anatomy, have such essential relations to true shells, they have sufficient differences to enable a vulgar conchologist, with his arbitrary definitions, to dispute this analogy.'

In the present species, the shell is, however, too strongly marked as such, to be disputed; and there are other species, where the existence of a shell, as such, is equally distinct. The shade, therefore, between the naked and the shelly molluscæ, can-

not be disputed. Even in the shelly molluscæ, however, the difference from the other kinds is more apparent than real. Every shell is formed in the thickness of the integuments, in strata, like the mucous membrane of Malpighi between the true skin and the epidermis.

'With respect to the living animal, then, we see that the cloak is not simply *under*, as the first leaf of a book is under the pasteboard; but that, from the edges of the mantle, a membrane arises, attached to the margin of the shell, and which, folding over, covers it entirely. In the greater number of shells this membrane is thin, and of a dry nature; it is rubbed and destroyed on the most projecting parts; which has prevented it from receiving sufficient attention. The genera before us differ only from the membrane being thicker and more fleshy, and not so easily destroyed.'

The particular description of this little animal we cannot abridge. The above remarks were, however, in our opinion, too curious to be omitted and, as less generally known, too interesting to be abridged.

'Correspondence. Extract of a Letter from M. Riedlè, first Gardener on board the Géographe, one of the Vessels commanded by Captain Baudin, dated from Timor, September 28, 1799.'—The expedition which sailed under the command of captain Baudin, is not yet returned. The author describes the northern coast of New Holland, which consists of a sandy peat, and, below, of turf; yet the vegetable riches are considerable. Timor, however, from the contrast, appears, like Juan Fernandez to Anson, an earthly paradise. M. Riedlè seems to have been indefatigable in collecting plants. A description of two kangaroos, obtained in England in exchange for a lioness, is subjoined.

'A Description of the subterraneous and volcanic Strata of Niedermennich, three Leagues from Andernach, whence the porous Lava, fit for excellent Mill-stones, is taken. By Faujas de St. Fond.'—The author describes these mill-stones, as taken from a stratum of porous lava. His representation, however, of the country around, is not very consistent with this idea; and it seems more probably a decayed granite. Its utility, nevertheless, for the purpose to which it is applied, is indisputable.

'All is grand, all is vast, in these subterraneous caverns, which man has had the boldness and the power to hollow out. Full of stones of every form, and every dimension—some in a rough, others in a complete state; workmen who shape them; those who dig them, and who seem suspended near the top of the vaults, illuminated by lamps; children of every age separating the soil from the stones; mill-stones fastened to long cables, which ma-

chines raise with a harsh sound; the frequent action of numerous hammers on a sonorous stone; the sparks which fly from these—all form a new and singular spectacle, which could scarcely be expected in the midst of these gloomy caverns, hollowed by human hands, in a hard half-vitrified mass, which still bears the characters and colours of a vast subterraneous conflagration:—in a word, the sense of danger under these bold and threatening vaults, gives an additional interest to this vast and striking picture.'

This stone, if it be indeed lava, seems to have had a tendency to retract in prisms. Two excellent views of the internal parts of the cavern, with the men at work, are subjoined.

'Note on the supposed radiated Zeolite of the Duchy of Deux-Ponts.'—This fossil, composed of globular masses, striated internally from the centre to the circumference, with occasionally a compact texture of a greenish or pale yellow, has been called by baron Born a zeolite; but M. Haüy has discovered it, from its crystallisation, to be a species of prehnite, of a greater specific gravity than that of the Cape of Good Hope, which is heavier than that of France. This difference seems to arise from a larger proportion of iron.

'A Description of a new Species of Pink. By Des Fontaines.'—This flower is distingushed by hard, thick, thorny leaves, from which its trivial name spinosus is derived.—Its seeds were brought from Persia, by Olivier.'

'An Account of the Life and Writings of Gærtner. By Deleuze.'—This is a very interesting account of a very zealous and able naturalist. His work, De Seminibus Plantarum, is one of the most important in the science of botany; and we are glad to hear that a third volume is now printing. He has left the descriptions and the plates of fifty genera, which, with his papers on natural history and comparative anatomy, will probably now soon appear. The branch of the former which he most cultivated, next to botany, was the molluscæ; and, on the latter subject, he had paid particular attention to the organs of the voice in different animals.

'Report of the Professors of the Museum on the Collections of Natural History brought from Egypt. By E. Geoffroy.'—This report is written by La Cépède, who, with Lamarck and Cuvier, was charged with the examination, and to give an account of the collection. The report is by no means full; and we strongly suspect that it is not so valuable as has been supposed. Indeed, we know that the French had not, at any time, possession of more of the territory than their army covered, and that the naturalists must always be supported by military detachments.

One great object, viz. to ascertain whether species have degenerated or changed, seems to have been accomplished: they continue, without the slightest variation. The ibis, preserved

from the remotest antiquity, resembles the modern bird; though authors have apparently mistaken the species,—a subject we have already noticed. An ibis has been so carefully unrolled, that not the slightest injury is done to a single feather; and some human mummies have been found with the teeth white and uninjured; which proves, that the carious incisores, which we generally have hitherto discovered in these preserved bodies, are owing to their age and mode of life.

With respect to quadrupeds, Geoffroy's attention has been directed rather to the smaller kinds, since the larger were less likely to escape the notice of former travellers and observers. A new species of hare, another of the fox, and another of the hedge-hog, have rewarded his exertions. He has discovered *four* new species of rats, and *eleven* of bats. He has found one or two species of rats covered with prickles, which, added to those traced in Cayenne by Martin, and in Paraguay by Azzara, show a tendency in these animals to assume this covering in hot climates. Many species of quadrupeds, though not new, he has added to the collection of the museum, viz. the booted lynx of Bruce; the mangoust with a long tail, tufted at the point, (the true ichneumon of the ancients); the civet cat, &c.

He has brought home few birds, since those of Egypt are the same with those of other countries, except several which escape across the desert, from Africa;—these he has collected, but they are not all new. Many of the serpents have not hitherto been described, particularly the coluber haje, whose neck enlarges like the naja, which the Egyptians considered as the emblem of preserving providence, because, on raising his head in a threatening position, he seems to guard the field in which he is traced. He has brought, also, the true viper of the ancients, which has occasioned so many disquisitions; and has more accurately ascertained the true tapinambis of Egypt.

The fishes introduced by Geoffroy are numerous; but the greater part are noticed in La Cépède's work. During his short stay at Suez he collected some new species from the Red Sea; and at Alexandria and Rosetta, from the Mediterranean. Some large skeletons of animals are added, which the author could bring in no other way,—viz. one of an immense silurus of the Nile, a new species; a large naje; and a jereboa, which the museum did not before possess, that seems to be the dipus meridianus. The sacred animals will enrich this collection. The skeleton of the sacred cat has since been added.

'Memoir on the Clio Borealis. By G. Cuvier.'—The molluscæ begin now to share the attention of naturalists—an attention long delayed, or partially and imperfectly bestowed. The animal before us, though myriads crown the northern seas, and it has been called the food of the whale, has nevr been described with care, and has sometimes been carried to

one genus, sometimes to another. Linnæus referred it to the clios, a genus established by Brown, from conjecture; and Gmelin, adopting a mistake of Fabricius, and "adding, *as usual*, to it," called it clio retusa, separating the clione borealis of Pallas, under the appellation of borealis. We cannot pursue, in this place, its various and unexpected removals in scientific systems; but must remark, that, in this article, its anatomic structure is examined with great attention, and detailed with particular perspicuity. As it has only a single heart, without a pericardium, feet, eyes, or the other characters of sepiæ, or the cephalodes of Cuvier, it must be left with the slugs, the doris, and other molluscæ, called by this author gasteropodes: yet it has no feet under the belly. It will, therefore, be necessary to form a new order, or to change the title and the character. The subject, however, is to be considered in another memoir.

'Correspondence.'—The first article of this miscellaneous collection is a 'Letter from M. Peale, Director of the Museum of Natural History at Philadelphia, dated July 1802.' This letter chiefly relates to the fossil bones of the mammoth, and the fossil remains of a vast animal resembling the ox, already noticed. A diadelphis, sent to France, had no longer any young in her pouch, as when it left America, but appeared to be a variety of diadelphis Virginiana. The whole genus has claimed the notice of Geoffroy, and his work will be soon published. The species of animals on the north of the two continents appear, in many respects, different, as we had long since occasion to point out.

The second communication is the 'Extract of a Letter from M. Ruffo, a Farmer at Eric, to M. Thouin.'—It relates to the Peruvian plant, the aloisia citriodora. Its leaves have the flavour of lemon, and it will probably bear the climate of France. The plant dies away in the winter, but the roots throw up fresh shoots on the return of summer.

'Extract of a Letter from the Isle of France, June 28, 1802.'—This letter contains an account of the curious vegetable productions of the east, forwarded from this island, to the museum. These were the produce of the island.

'An Account of the Indicolite, of M. Daranda (Journal de Physique, August 1800). By M. Haüy.'—M. Daranda supposed that he had discovered twelve new species of minerals, but the greater number are found to be varieties of well-known bodies. The indicolite, a fossil of a beautiful blue colour, is only a tourmaline.

'A Memoir on the Caoutchouc, or the elastic fossil Bitumen of Derbyshire. By Faujas de St. Fond.'—We have already received sufficient information respecting this substance, from Whitehurst, Mawe, and Faujas de St. Fond himself in his Travels.

It is found in small masses, in different cavities, at the foot of the mountains near Castleton. Our author describes it with care, but concludes, somewhat too hastily, that it is a vegetable production, from some such trees *as furnish it at present.* The opinion is, truly, gratuitous; and, while we have a real *flexible* fossil, why may we not have an *elastic* one? At all events, a chemical analysis should first have determined it to be a vegetable body, and some experiments should have been adduced to show, that none of our indigenous trees could produce such an elastic substance.

(To be continued.)

ART. VI.—*Traité de Mécanique Céleste, &c.* Paris. 1802.

A Treatise on Celestial Mechanics. By P. S. La Place, Member of the Conservative Senate, of the National Institute, of the Board of Longitude, of the Royal Societies of London and Göttingen, of the Russian, Danish, and Italian Academies of Science, &c. Vol. III. 4*to.* Imported by De Boffe.

THE first two volumes of this celebrated work were published in the year 1799, and were noticed somewhat at large in the Appendix to Vol. XXVII. of our Second Series. But, as more than four years have elapsed since we spoke of the preceding volumes, it may not be improper to describe, very briefly, their nature and object.

Ever since the time when our immortal *Newton*, by a judicious and happy combination of experiment and analysis, was led to that most important and noble discovery of the universal gravitation of matter, the labours and investigations of philosophers have been directed into the new channel with considerable energy, and a truly gratifying success: *Maclaurin*, the *Bernouillis*, *Simpson*, *Euler*, *Landen*, *D'Alembert*, *Frisi*, *Legendre*, *Lagrange*, and other great men, availed themselves eagerly of the discoveries of the illustrious British philosopher; and, at the same time that they greatly improved and facilitated the application of the new analysis, they furnished considerable accessions to the stock of physical science, and gradually removed every possible objection to the discovery of universal gravitation. While, however, much had been done in these respects in the course of the last century, it long remained a subject of regret, and, indeed, of disadvantage to science, that this vast portion of knowledge lay scattered among the numerous and multifarious volumes of academies and societies, and that no one was found who possessed both talents and inclination fitted for the arduous task of blending these distinct, and in some respects heterogeneous materials, into one compacted mass. In the *Celestial Mechanics*, this interesting object is accomplished,

with such skill and success, as might naturally be expected from M. La Place's genius and attainments, and which must cause him to be revered by posterity as one of the greatest benefactors to physical astronomy. The first two volumes of LaPlace's work are divided into five books: of these, the first contains the general principles of the equilibrium and motion of matter, comprising what relates both to solids and fluids: the second has for its object the law of universal gravitation, and the motion of the common centres of gravity of the heavenly bodies: the third treats of the figure of these bodies, and states the limits of ellipticity which are admissible consistently with a given angular motion of rotation: the fourth relates to the oscillations of the sea, and of the atmosphere, and applies the theory, with singular ingenuity, to the phænomena of the tides in differents parts of the terraqueous globe: and the fifth, in which the author treats of the motions of the celestial bodies round their own centres of gravity, comprises expressions for the variations of degrees, the gravitation at the surface of the earth, the precession of the equinoxes, the nutation of the earth's axis, the libration of the moon, the figure and rotation of Saturn's rings, and their permanence in the plane of his equator.

The volume now before us contains the sixth and seventh books of the entire work, which, together, comprise the *particular* theory of the celestial motions. The sixth book treats of the theory of the planetary motions, and particularly with a view to the perfection of astronomical tables, by means of the results obtained from the theory: the seventh book contains the theory of the moon; and here the chief object of the author is to show, that the law of universal gravitation is the sole source of all the inequalities of the lunar motions. He then avails himself of that law as an instrument of discoveries, to render more perfect the theory of lunar motion; and thence deduces several important elements of the system of the world; such as the secular equations of the moon, her parallax, that of the sun, and the oblateness of the earth.

But to enter a little more into particulars — Book the sixth is divided into eighteen chapters, in which the different subjects are arranged in the following order: Formulæ of the planetary inequalities depending on the squares and the superior powers of the eccentricities and inclinations of the orbits; inequalities depending on the square of the disturbing force; the perturbations caused by the sun's ellipticity; the perturbations in the planetary motions by the action of their satellites; considerations on the elliptical part of the radius vector, and of the motions of the planets; numerical values of the quantities which enter into the expressions of the planetary inequalities; numerical expressions of the secular variations of the elements of the planetary orbits; theory of Mercury;

theory of Venus; theory of the motion of the earth; theory of Mars; theory of Jupiter; theory of Saturn; theory of Uranus; certain conditional equations which exist between the planetary inequalities, and which may serve for their verification; the masses of the planets and of the moon; on the formation of astronomical tables, and on the invariable plane of the planetary system; the action of the stars on the planetary system. Book the seventh (on the lunar theory) contains six chapters: in these are treated, integrations of the differential equations of the lunar motion; the lunar inequalities occasioned by the *non-sphericity* of the earth and moon; lunar inequalities arising from the action of the planets; comparison of the preceding theory with observations; an inequality of a *long* period which appears to exist in the moon's motion; the secular variations of the motions of the moon and earth, which *may* be produced by the resistance of an ethereal fluid surrounding the sun.

In a work like that before us, consisting almost entirely of profound and abstruse investigations, and in which we frequently meet with whole pages of analytical expressions, with scarcely a connecting word, it is no easy task to select passages to lay before the general reader: yet, as M. La Place has permitted a few pages of a more inviting complexion to enter his treatise, we shall extract two or three passages, which are of themselves sufficient to show that this distinguished author possesses an enlarged and extensive acquaintance with the history of his favourite science, and can, whenever he pleases, not only raise to the surface truths deeply hidden, but exhibit, under popular colours, that which nothing but unremitting exertions, and first-rate talents, could have brought to light.

Our first extract shall be taken from the author's preface, where, after hinting at the manner in which the improvement of tables has kept pace with the progress of astronomy, he glances at the necessity for calling in the aid of systems, and new moulding them according to circumstances, and then proceeds to draw a short sketch of the most important discoveries in the science.

'About the middle of the sixteenth century, Copernicus, by deducing from the appearances the real motion of the earth about the sun and upon herself, exhibited the universe under a new point of view, and changed the face of astronomy. An unexampled concourse of discoveries has rendered for ever memorable, in the history of the sciences, the next century, otherwise illustrious by so many master-pieces in literature and in the fine arts. Kepler discovered the law of the motion of the planets in ellipses. The telescope, invented by the happiest of accidents, and

improved immediately by Galileo, enabled him to trace in the heavens new inequalities and new worlds. The application made by Huygens of the pendulum to clocks, and that of telescopes to the quadrant, in giving precise measures of angles and of duration, rendered sensible the smallest inequalities of the celestial motions. At the same time that observation proposed to the human mind new phænomena, it created for their explication, and submitted to calculation, new instruments of thought. Napier invented logarithms: the analysis of curves and dynamics came from the hands of Descartes and Galileo: Newton discovered the differential calculus, decomposed the light, and raised up the general principle of gravitation. In the century which has just slidden away, the successors of this great man have completed the edifice of which he had laid the foundation: they have brought to perfection the infinitesimal analysis, invented the calculi of partial differences, both infinitely small and finite, and reduced into *formulæ* the whole of mechanics. In applying these discoveries to the law of gravitation, they have brought to it all the celestial phænomena, and have given to theories and astronomical tables unhoped for precision; which is, above all, to be ascribed to the labours of French geometers, and to the rewards proposed by the Academy of Sciences. If we unite to these discoveries those of Bradley, concerning the aberration of the stars, and the nutation of the terrestrial axis; the multiplied measures of degrees, and of the pendulum—operations of which France has furnished the example, in sending academicians to the north, to the equator, and to the southern hemisphere, to observe there the magnitude of these degrees, and the intensity of gravitation; the arc of the meridian comprised between Dunkirk and Barcelona, determined by very precise operations, and serving as the most natural and simple basis to the metrical system; the numerous voyages performed to take cognisance of the different parts of the globe, and to observe the transits of Venus over the sun; the exact determination of the dimensions of the solar system, the fruit of those voyages; the planet Uranus, his satellites, and two new satellites of Saturn, discovered by Herschel: finally, if we unite to all these discoveries the admirable invention of instruments of reflexion so useful on the sea, and those of the achromatic telescopes, the repeating circle, and marine time-keepers; the last century, viewed under the relation of the progress of the human mind in the mathematical sciences, will appear worthy of that which preceded it. The present century has commenced under auspices the most favourable to astronomy. Its first day has been remarkable for the discovery of the planet Ceres, followed almost immediately by that of the planet Pallas, of which the mean distance from the sun is nearly the same. The proximity of these two very small bodies to Jupiter, and the magnitude of the eccentricities and inclinations of their intersecting orbits, produce in their motions considerable inequalities, which will, some day or other, shed new light upon the theory of celestial attractions, and give cause to still greater perfection.' Pref. p. xi.

In the various investigations relative to the inequalities of the planetary motions, it is obvious that we may *(cæt. par.)* place reliance upon the results in proportion to the accuracy with which the real masses of the planets are assumed. The method by which M. La Place has deduced the numeric values of these masses being simple, at the same time that it is somewhat different from that which is commonly adopted, we shall extract a part of his observations on this subject.

'*Masses of the planets, that of the sun being unity.*

'Mercury.. $m = \frac{1}{2025310}$; ..... Venus .... $m^{I} = \frac{1}{383130}$;
'The Earth $m^{II} = \frac{1}{325820}$; ..... Mars..... $m^{III} = \frac{1}{1846052}$;
'Jupiter .. $m^{IV} = \frac{1}{1067.09}$; ..... Saturn .... $m^{V} = \frac{1}{3359.40}$;
'Uranus..... $m^{VI} = \frac{1}{19504}$.

'Of all these masses that of Jupiter is the best known. I have inferred it from the following equation, which results from No. 25 of the second book. If we call τ the side; real revolution of a planet m; τ that of one of its satellites, whereof q is the sine of the angle under which the mean radius of its orbit is seen from the centre of the sun, at the mean distance of the planet from that centre; the mass of the planet, that of the sun being taken for unity, is $q^3 \left(\frac{\tau}{\tau}\right)^2 \div 1 - q^3 . \left(\frac{\tau}{\tau}\right)^2$.

'We have, relatively to the fourth satellite, $q = \sin. 1530''.38$; $\tau = 4332.^{da}\ 602208$; $\tau = 16.^{d}\ 6890$; whence we obtain $m = \frac{1}{1067.09}$.

'The mass of Saturn has been deduced in the same manner, by supposing the sidereal revolution of its sixth satellite, equal to $15.^{d}\ 9453$, and the angle under which the mean radius of this satellite's orbit appears from the sun, at the mean distance of Saturn, equal to $552''.47$. The mass of Uranus has been determined in like manner, by supposing, conformably to the observations of Herschel, the duration of the sidereal revolution of its fourth satellite equal to $13.^{d}\ 4559$, and the mean radius of the orbit of that satellite seen from the sun, at the mean distance of Uranus, equal to $136''.512$. But the greatest elongations of these satellites from their respective planets are not so certain as that of the fourth satellite of Jupiter. Their observation merits all the attention of astronomers.

'The mass of the earth has been determined in this manner. If we take for unity the mean distance of the earth from the sun, the arc described by the earth in a second of time, will be the relation of the circumference to the radius, divided by the number of seconds in a sidereal year, or by $36525638''.4$ *. By dividing the

* This author, it must be remembered, has adopted the decimal division both of the day and the quadrant. Rev.

square of this arc by the diameter, we have $\frac{1479565}{10^{20}}$ for its versed sine; that is, the quantity which the earth falls toward the sun during a second, in virtue of its relative motion about that star. On the terrestrial parallel, of which the square of the sine of the latitude is $\frac{1}{2}$, the attraction of the earth causes bodies to fall through 3.66553 metres in a second. To reduce this attraction to the mean distance of the earth from the sun, it is necessary to multiply by the square of the sine of the solar parallax, and divide the product by the number of metres which that distance includes: now the terrestrial radius, on the parallel which we are considering, is 6369374 metres; by dividing, therefore, this number by the sine of the solar parallax, supposed equal to 27″.2, we have the mean radius of the terrestrial orbit expressed in metres; from whence it follows, that the effect of the attraction of the earth, at the mean distance of that planet from the sun, is equal to the product of the fraction $\frac{3.66553}{6369374}$, by the cube of the sine of 27″.2; it is, of consequence, equal to $\frac{4.48855}{10^{20}}$. Subtracting this fraction from $\frac{1479565}{10^{20}}$, we have $\frac{1479560.5}{10^{20}}$, for the effect of the sun's attraction at the same distance: the masses of the sun and of the earth are, therefore, in proportion as the numbers 1479560.5 and 4.48855; whence it follows that the mass of the earth is $\frac{1}{329620}$. If the parallax of the sun be a little different from that which we have assumed, the value of the mass of the earth will vary as the cube of that parallax, compared with that of 27″.2.

'I have inferred the mass of Venus, from formulæ, which I shall give in the sequel, of the secular diminution of the obliquity of the ecliptic to the equator, by supposing this diminution equal to 15430″. It is, in effect, that which results from observations that appear to me to merit the most confidence. As for the masses of Mercury and of Mars, I have supposed, from the observations, the mean diameters of Mercury, Mars, and Jupiter, seen at the mean distance of the earth from the sun, to be 21″.60, 35″.19, and 626″.04 respectively. These diameters will give their masses, that of Jupiter being known, if we know the law of their densities: but, in comparing the masses of the Earth, of Jupiter, and of Saturn, to their bulks, we found that the density of these three planets is nearly in the inverse ratio of their mean distances from the sun; I have, therefore, adopted the same hypothesis relatively to the three planets, Mercury, Mars, and Jupiter, whence result the preceding values of the masses of Mercury and of Mars. The irradiation and the other difficulties which attend the observation of the diameters of the planets, joined to the uncertainty of the hypothesis adopted concerning the law of their densities, render these values the more uncertain; so that this hypothesis is distant from the truth, with respect to the masses of Venus and of Uranus,

Happily, Mercury and Mars have the least influence on the planetary system; and it will be easy to correct the results according to their effects, when the developement of the secular inequalities has exactly made known their masses.' P. 64.

In the sixteenth chapter of the sixth book this subject is resumed, and some alterations are made in the numerical expressions for the masses of Venus and Mars. The corrections result from discussions of M. Delambre, founded on the observations of Drs. Bradley and Maskelyne: here the mass of Venus is expressed by the fraction $\frac{1}{356632}$; that of Mars, by $\frac{1}{2546320}$. This is an important diminution in the mass of Mars, and in its effects is sufficient to reduce the inequalities produced by this planet in the motion of the earth, in the ratio of .725 to unity. M. La Place, in a former part of his work, determined the mass of the moon by observations on the tides in the port of Brest: but in this chapter he says, the value he had previously given is somewhat too great, and he makes a correction by means of three astronomical phænomena; 1st. The lunar equations of the solar tables, whence he deduces the mass of the moon $\frac{1}{69.2}$ of that of the earth. 2dly. The nutation of the earth's axis, whence he infers the value $\frac{1}{71}$. 3dly. The parallax of the moon, whence he concludes that the mass is $\frac{1}{74.2}$. Comparing together, therefore, both the celestial and terrestrial phænomena, he lays down $\frac{1}{68.5}$ as the most accurate value of the mass of the moon in terms of that of the earth.

The seventh chapter, which, as already observed, is on the theory of the moon, commences with some very judicious observations; of which, however, we can only extract a small portion. After remarking, that if the law of gravity, according to the square of the distances inversely, be the real law of nature, investigations skilfully conducted ought to give the same results as observation; and stating, that in his own inquiries he has paid attention to *all* the inequalities as far as the third order, and many even of the fourth and fifth, he proceeds thus:

'To compare my analysis with observations, I have considered that the co-efficients of the lunar tables of *Mason* result from the comparison of the theory of gravity with eleven hundred and

thirty-seven observations of *Bradley*, made in the interval from 1750 to 1760. *Burg*, a distinguished astronomer, has lately rectified them by means of more than 3000 observations of *Maskelyn*, between the years 1765 and 1793. The corrections he has made are not very considerable: but he has added to them new equations indicated by theory. The tables of these two astronomers are disposed in the same form as those of *Mayer*, of which they are the successive improvements: for, with regard to that celebrated astronomer, it must in justice be observed, not only that he first formed lunar tables sufficiently accurate to serve for the solution of the problem of the longitude, but even that Mason and Burg have drawn the means of improving their tables from his theory. The arguments are there made to depend one on another, in order to diminish their number: I have reduced them, with peculiar care, to the form adopted in my theory; that is to say, into sines and cosines of angles increasing in proportion to the true longitude of the moon. In comparing the co-efficients of my formulæ, I have had the satisfaction to see that the greatest difference, which in Mayer's theory (one of the most correct that has appeared to this day) rises almost to a hundred seconds, is here reduced to thirty relatively to Mason's tables, and under twenty-six with respect to Burg's tables, which are still more precise. This difference would be diminished by estimating the quantities of the fifth order that have influence, and which the inspection of terms already calculated is able to make known; and it is this that proves the calculation of two inequalities in which I have carried the approximation even to quantities of that order. My theory, moreover, brings the tables nearer together with regard to the motion in latitude; the approximations of this motion are more simple and more converging than those of the motion in longitude; and the greatest difference betwixt the co-efficients of my analysis and those of the tables is only six seconds; so that we may look upon this part of the tables as being furnished by the theory itself. As to the third co-ordinate of the moon, or of its parallax, it has been, with reason, thought better to form tables of it solely by the theory; which, considering the minuteness of the inequalities of the lunar parallax, ought to give them more exactly than observations. The differences between my results on this object and those of the tables, are such, therefore, as exist between my theory and that of Mayer, followed in this point by Mason and Burg; they are so small that they merit little attention: but as my theory approaches more nearly to observation than that of Mayer, relatively to the motion in longitude, I have reason to think it possesses the same advantage with regard to the inequalities of the parallax.

'The motions of the perigee, and of the nodes of the lunar orbit, afford also the means of verifying the law of gravitation. Their first approximation originally gave to geometers only half of the first of these motions; and *Clairaut* thence concluded, that it was necessary to modify that law by adding to it a second term. But at length he made the important remark, that a further approximation brought theory to agree with observation. The

motion inferred from my analysis does not differ from the true one by its four hundred and fortieth part; and the difference is not a three hundred and fiftieth part, with respect to the motion of the nodes.

'Hence it follows incontestably, that the law of universal gravitation is the sole cause of the lunar inequalities: and if we consider the extent of these inequalities, and the proximity of this satellite to the earth, we may conclude that it is, of all the celestial bodies, the most proper for establishing this great law of nature, and the power of analysis—that wonderful instrument, without which it had been impossible for the human mind to penetrate into a theory so complicated, and which may be employed as a mean of discoveries as certain as observation itself.' P. 172.

The limits to which we are obliged to confine ourselves, will only admit of another extract, which, though short, is interesting, as it suggests the causes to which the curious circumstance of the acceleration of the moon's mean motion is to be ascribed, and affirms the invariable length of the day.

'One of the most interesting results from the theory of gravitation, is the knowledge of the secular inequalities of the moon. The ancient eclipses indicated, in its mean motion, an acceleration of which the cause has for a long time been sought in vain. At length the theory has shown me that it depends on the secular variations of the eccentricity of the terrestrial orbit; that the same cause diminishes the mean motions of the moon's perigee, and of its nodes, while that of the moon is accelerated; and that the secular equations of the mean motions of the moon, of its perigee, and of its nodes, are constantly in the relation of the numbers 1, 3, and 0.74. The ages to come will develope the inequalities, which are periodical like the variations of the eccentricity of the earth's orbit, on which they depend, and that will, some time, produce variations, at least equal to a fortieth part of the circumference, in the secular motion of the moon, and a twelfth of the circumference in that of its perigee. Observations have already confirmed these with a remarkable precision: their discovery led me to conceive that it was necessary to subtract fifteen or sixteen minutes from the actual secular motion of the lunar perigee, which the astronomers have deduced from the comparison of modern with ancient observations: all the observations made for an age, place beyond doubt this result of the analysis. We see here an example of the manner in which the phænomena, by their developement, exhibit to us their true causes. When only the acceleration of the mean motion of the moon was known, we could only attribute it to the resistance of æther, or to the successive transmission of gravity; but the analysis teaches us that these two causes produce no sensible alteration in the mean motions of the nodes and of the lunar perigee; which would suffice for their exclusion, even though we were ignorant of the true cause. The correspondence of the theory with the observations proves to us, that if the mean

motions of the moon are altered by causes not connected with the action of gravitation, their influence is very small, and hitherto insensible.

'This correspondence establishes to a certainty the *constancy of the length of the day*, an essential element of all astronomical theories. If this length now exceeds, by the hundredth part of a second, that of the time of Hipparchus, the actual duration of the century will be greater than at that time, by 365″.25. In this interval the moon describes an arc of 534″.6; the actual secular mean motion of the moon would appear, therefore, augmented by this quantity, which would add 13″.51 to the secular equation of 31″.4248, that I found by the theory, for the first century, reckoned from 1750. This augmentation is incompatible with the observations, which permit us not to suppose a secular equation greater by 5″ than that which results from my analysis; we may therefore assert, that the length of the day has not varied a hundredth part of a second since Hipparchus; which confirms what I have found *à priori* in No. 12. of the fifth book, by the discussion of all the causes which can produce a change.' P. 176.

Speaking of this work as a whole, the necessity of any formal encomium is superceded by the circumstance of the great and universal celebrity it has already obtained. In almost every part of the *Mécanique Céleste* has its author displayed an extraordinary union of profound knowledge, fertile invention, brilliant genius, and discriminating judgement: and the science of astronomy must infallibly derive the most lasting benefits from powers like his, so skilfully employed upon the developement of Nature's exalted mysteries. But we cannot help thinking, that the mode of investigation to which this philosopher seems so partial, however well calculated to explore hidden truths, is not guarded on all sides so securely as might be wished, against the admission of error. In our review of the first two volumes, we observed that they were of a purely analytic nature, and had not one geometric figure or diagram. The same plan is continued through the present volume: and we are still convinced it is liable to strong objections. In a performance conducted like M. La Place's, the student is not so much taught mechanic philosophy, as an adroitness in the management of algebraic expressions; and he may have a strong conviction of the accuracy of his conclusions, without a single idea of the nature of the objects which ought to lie at the foundation of his process. This total absence of ideas, or at least this freedom from the necessity of frequently recurring to first principles, exposes the investigator to repeated risks of paralogism and absurdity. A similar procedure

has hurried the most admirable analysts, particular Euler*, into ridiculous mistakes; and we are persuaded, that, had not the nature of La Place's inquiry compelled him often to compare his operations with the face of nature, and thus check the first advances towards error, even his superlative analytical dexterity would not have preserved him from failure. We wish not to detract from his great merit, but to warn others against the fascination of a splendid example. Let there be as little deviation as possible from the geometrical method; for, since motion includes the conception of *lines* with their various qualities of magnitude and position, we thus keep the subject of discussion closely in view: or, to conclude in the words of a celebrated writer,—'Let the accomplished mathematician push forward our knowledge by the employment of the symbolical analysis; but let him be followed as closely as possible by the geometer, that we may not be robbed of ideas, and that the student may have light to direct his steps.'

ART. VIII.—*Le Guide du jeune Militaire, &c.*

*The young Soldier's Guide, or Instructions from a Father to his Son, on the Military Art, with its requisite Duties, Virtues, and Talents. By the Baron d'A***, Colonel of Infantry. A new Edition. By Dubroca.* 8*vo.* Paris. 1802.

ART. IX.—*The Military Mentor. Being a Series of Letters recently written by a General Officer to his Son, on his entering the Army: comprising a Course of elegant Instruction, calculated to unite the Characters and Accomplishments of the Gentleman and the Soldier.* 2 *Vols.* 12*mo.* 10*s.* 6*d. Boards.* Phillips. 1804.

THERE is a somewhat antiquated book of the French, *Conseils d'un Militaire à son Fils*, of which this is an interpolated edition. Some old-fashioned anecdotes are dropped; some incidents during the revolution and its wars are added; some complimentary paragraphs about new men are inserted; and many notions, military and moral, are approximated to the spirit of the present times, and reformed by recent experience. Thus a respectable manual of military anecdote has been fitted for renewed circulation, and accommodated for the amusement of those officers on whom peace had conferred the leisure requisite for speculative instruction. Dubroca, an intelligent man, a book-maker and book-seller, has been the re-fashioner of this Guide. During peace he catered for the women,

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* See Robins's Tracts, Vol. II. pp. 194. 214, *et seq.*

during war he caters for the men of France. In times of trouble, the fair sex become the depositaries of civilization; in times of tranquillity, the stronger sex undertake to advance it.

As great part of this work has passed into an English garb, under the title of the Military Mentor, we have preferred attaching our comments to that publication; else the quoted passages would be to translate afresh, which is at all times an unpleasing toil; it would not, however, be without some use; for the nationality of the English editor frequently suppresses the locality of traits which occur to him. At p. 211, Dubroca says 'that at the battle of Fleurus the French were ill clad, and that an officer, to encourage the soldiery, observed to them that the enemy had new clothes: 'Let us charge vigorously,' said he, 'and equip ourselves.' In the Military Mentor we are not told that this happened at Fleurus, or among Frenchmen. Similar suppressions of anecdotes which tend to illustrate the living generals of the French, are, for better reasons, adopted. Such is the expression of Bonaparte at Marengo to some troops who were giving way: 'Soldiers, I always stay to sleep where I fight.'

At p. 358, Dubroca ascribes to the following words of Brissot the notorious improvement of the French in the art of war during the revolution: 'What,' said he in the senate, 'you have soldiers proud of their character; and do you suppose there are none among them who anticipate the warlike arts of a free and regenerated nation? Do you suppose that courage, for which there is no substitute, is not itself a substitute for all else? We want general officers, you say. Be comforted. Make them. The secret is soon found: suspend the routine of military advancement; lead merit forth from the ranks. Liberty, and the hope of her applause, will mature talent and create men.' This is justly observed; but there is still a difficulty in carrying into practical efficacy the system of rewarding merit with advancement, without attention to previous rank. We believe Saint-Just was much consulted in bringing this to bear; and that the commissioners, sent by the convention to attend the armies, collected, on the spot of battle, information concerning individual conduct; and despotically recompensed the excellent—sometimes in defiance of the very general, whom they were permitted to supercede. Let those who wish the English to excel more as a military country, open the gates of advancement to spirit; make merit the sole passport to rank; abolish the superstitions of seniority, and the traffic of purchase; and, by introducing at our universities the military sciences, give us a chance for an instructed staff.

IT is by war, says Vegetius, that independence is preserved, rank perpetuated, and empire extended: to war, the Spartans, to war, the Romans considered every science as subordinate. The attention of the Spartans and of the Romans to the arts of war was attended, however, with very different success. The Spartans never maintained in Greece a situation so enviable as the Athenians; they sacrificed to their military habits domestic comfort, humane feeling, intellectual culture, commercial opulence, and elegant gratification; yet they could not become a people of conquerors: the Macedonians, not the Spartans, were the eventual masters of Greece; whereas the Romans overcame successively each variety of hostile opposition, and permanently subdued every power within their reach, without missing the fruits of opulence and luxury at home. The name of Lycurgus, therefore, ought to be struck out of the list of wise lawgivers: he sacrificed every thing to an end, which he knew not how to attain; he inflicted on his gentlemen the privations of a work-house; and on his helots the oppression of negroes, to produce iron-hearted mothers, and a soldiery without ambition. It is the more important to bring into discussion the merits of Spartan legislation, as a set of Spartan law-givers has lately sprung up among ourselves; men, who are for having us become a military nation; who are for breaking down the ancient division of labour, which secured in each department the appropriate skill; and are for educating us all, like so many Frenchmen, to excel in the military exercises. Military morals are connected with military manners and military habits. Spirit is excited and enhanced in armies by juvenile conviviality: this is mostly followed by a riotous insolence of the armed classes. With an irritable sense of honour advances the multiplication of duels. The military exercises are acquired to most perfection by the young; but what is the consequence of convening shop-boys and journeymen at sixteen to the parade? Habits of early dressiness and libertinism are adopted, which their earnings will, as yet, not afford to supply; and the property of their masters is rashly violated. General Murat is said to have boasted that in a French army every man was a thief; which was also the case in Sparta: but even in England, where pecuniary probity is held peculiarly sacred, (and indeed commerce could not else thrive in any country) there is a proverbial suspicion of a tendency in the military taste to respect propriety more than property.

War, says Folard, is the proper study of nobles and of princes. What line of life so brilliant as the career of a general who applies his courage and his skill in the service of his country? It is an art, to excel in which exalts the private to

the level of his sovereign, and makes him the depositary of his power, of his glory, and of the fortunes of his dominions. It is an art, however, not to be wholly learned in books, and maps, and plans, and artillery-grounds: a month or two of practical service among young and rash generals teaches more than years of literary vigilance over the histories of Gustavus Adolphus and of Frederic, or the essays of Saxe and of Guibert. One of the first observations of a campaign is the unequal mortality of different regiments. There is no greater prodigality than to train a soldier to die of disease. The men born in the poorest provinces of the empire, reared in the hardiest habits, and accustomed to the severe temperance and abstinence of misery, are the best and the only durable instruments of the warrior. Unless, therefore, a country be universally poor, like France, and secure, from the general taste of the people, of finding everywhere the young men hardy and temperate, it is unwise to resort to ballot and conscription, instead of recruiting. Ballot withdraws everywhere an equal proportion of the population: but recruiting succeeds in proportion to the poverty of the district. The bounty at which a Londoner sneers, a Highlander eagerly grasps. Where it costs least to rear a man, he can always be bought cheapest. As nursery-grounds are made in bad soils, and cattle bred in mountainous districts, in order that the trees and beasts may thrive by removal; so men ought as much as possible to be produced in the lean and lacking corners of the empire; they transplant and flourish the better; they better meet fatigue and danger. The cheapest man-market answers best both to the general and to the state. If recruiting cannot proceed fast enough for the demand of our generals, what is the objection against importing boys from the Baltic? Probably at Hull a regular importation of that kind could be commenced, so as to be less costly than domestic recruiting is become already. There should be a provision for not accepting recruits above thirty years old: they will not stand the seasoning in those climates to which British armies are usually sent: veteran soldiers are good, but they must have been brought up to the profession of arms: the veterans of industry or of sottishness make very bad soldiers. Domestic barrack-service might indeed be reserved for recruits of this kind.

Pyrrhus, the king of Epirus, is said to be one of the first who have written on the art of war: the substance of the result of his experience must have travelled from Xenophon to himself, and from himself to Polybius and Cæsar, and the other writers who have commented on the military management of antiquity. From them we inherit unquestionably much instruction. And it may be doubted whether the method of clothing an army with convenience and œconomy was not as well under-

stood by the king of Epirus, as by any modern martinet. The Epirotes, to judge from analogy, cropped their hair close, went with their arms naked, were clad tight and warm about the body, had breast-plates, marched in philibegs, and had sandals which did not compress the feet. 'In a campaign,' says marshal Saxe, 'the hair is a filthy ornament to the soldier; and, once wetted, his head never dries; his shoes, stockings, and feet, rot together because he has no changes, and he is sent to the hospital by this compulsory nastiness; his gaters, so pretty on the parade, cost time and money to whiten; the hat soon loses, in the wet and in the wear, its form and its crown; it will not keep on the head of the tired man when he lies down to sleep; he remains exposed to the damp and dew with his head bare, and the next day he has a fever. I wish all the soldiers were cropped and had grey Welsh wigs'—*(perruques de peau d'agneau.)* The experienced marshal proceeds to other curious speculations, recommends the disuse of stockings on a march, and the filling up, as it were, the inside of the flat-heeled shoes with grease. But some of our regimental surgeons will, no doubt, give a complete treatise on the wholesomest method of clothing the soldiery, so as to deliver the army from the inconvenience of the present irrational foppery.

The muskets from Germany, which have lately been distributed in this country among the people, are made for men of a larger span than is usual here. Whether the arts of manufacture, where they have long prevailed, tend to lessen the hand and shorten the fingers, or whether the gunsmiths of Sorlingen have served us with what would not sell in Prussia, the circumstance however proves, that not only the raising and clothing of troops are not yet reduced to the precision of science, but not even the arming of them. The proportion which the engineers or artillery corps bear to the infantry, is in the English service far too small: every thing military about us seems the lesson of apes, and not of reasoners. We want indeed a military Mentor.

But how has this writer performed his task? Like one who is more solicitous to make our officers gentlemen, than to make them soldiers; like a friend to humanity (Letter IX.), to modesty (Letter X.), to discretion (Letter XXII.), to chastity (Letter XXXII.), and to elegance of style (Letter XXXVIII.); but like one who thinks that a crop of antagonist qualities can be raised in the same field, and that the most inconsistent virtues may with entire propriety be recommended to the same individual. The soldier of our author, like the orator of Cicero, would comprehend all the knowledges and all the virtues, the minute accomplishments and the great qualities, the boldness of a general and the temper of a sage; and would both know how to acquire empire and to deserve it. If, however, this book be not single enough in its point of view;

if its aim be not confined to inculcate and to enhance the qualities essentially military, it is still an amusing and a useful book. It may be read with pleasure and with advantage by volunteer officers and privates; it will make them better men, and favour the acquisition of the liberal and generous virtues: and it will supply them with a stock of military anecdote and doctrine, which may be agreeably read at breakfast, and repeated at mess. We shall pick some of the anecdotes which will best furnish a pretext for commentary. In the fourth letter, on magnanimity, there is one which cannot too often be repeated.

'Leonidas having, with three hundred men only, disputed the pass of Thermopylæ against the whole army of Xerxes, and being killed in that engagement, Xerxes, by the advice of Mardonius, one of his generals, caused his dead body to be hung upon a gallows; thus making the intended dishonour of his enemy his own immortal shame. But some time after, Xerxes being defeated, and Mardonius slain, one of the principal citizens of Ægina came and addressed himself to Pausanias, desiring him to avenge the indignity that Mardonius and Xerxes had shown to Leonidas, by treating the body of Mardonius after the same manner. As a farther motive for doing so, he added, that by thus satisfying the manes of those who were killed at Thermopylæ, he would be sure to immortalize his own name throughout all Greece, and make his memory precious to the latest posterity. "Carry thy base counsels elsewhere," replied Pausanias; "thou must have a very wrong notion of true glory to imagine, that the way for me to acquire it is to resemble the barbarians." Vol. i. p. 49.

This is perhaps the most important lesson to men in authority, which has ever been given. There is in human nature a vindictive feeling, a resentful propensity, which disposes men in all cases to retaliation. 'An eye for an eye, a tooth for a tooth,' is the instinctive original sin to which we tend. That which the adversary has done; that which is imputed to the adversary even as his intention, is not only repeated or practised without remorse, but with secret approbation, and with a sentiment of conscious equity. The crimes of history, like thunder-claps, are echoes of the first snap. By placing the point of honour in never imitating the severities of a foe, every act of injustice and cruelty tends to become not the parent of more, but the last of its race. He has a wrong notion of true glory, who hopes to acquire it by resembling the barbarians.

The following passage deserves notice, because it tends to render obvious the principle of a line of conduct, which, in civil or political life, is too commonly blamed. The man who defends in parliament what he disadvises in the cabinet, is censured by very numerous classes of judges. When three of us are going to take an airing in a phaëton, and two decide for Hampstead and one for Shooter's Hill, if this last have to drive,

he is still to drive to Hampstead. There are conversations and public discussions which form a part of the means of execution; all these, when posterior to decision, are to be conducive to the end in view, whatever might, previously to discussion, have been the sentiment of the speakers.

'It is especially in a council of war, that firmness is necessary to an officer. Majorities are not always on the side of wisdom. Every one having a right to declare his own opinion, all ought to be heard; but it often happens, either that the votes are influenced by the presence of a man distinguished by his reputation and his rank, and to whom therefore each one fears to render himself obnoxious, or the spirit of party divides the members. Sometimes an obstinate cabal opposes a general from the base principle of envy; not unfrequently the sophistry of falsehood and deception blinds the majority, and gains the ascendancy over those whose counsels are influenced by no other motives than the good of their country, and the glory of their sovereign. It is on such occasions that an officer, after having well weighed the opinions given, considered the reasons offered, and examined the motives, is called upon to defend the cause of truth with that undaunted firmness with which it ought ever to inspire a brave man, regardless of whom he may offend. As he ought not to be swayed by the number of the opinions that oppose him, neither should he be influenced by the vanity of appearing singular. It has been justly remarked, that if plurality of voices were always decisive, error would presently every where predominate, and banish truth from the world. The conscience of a brave man ought to be his only oracle. But when in a council a resolution is once irrevocably fixed, even against his opinion, it is of the utmost consequence that the subalterns and soldiers remain ignorant of the reasons which have been brought forward; because the bulk of mankind *count* opinions, rather than *weigh* them.

'It often happens in a council of war, that they are not the wisest and the best informed who are listened to and followed; but those who are at the head, to whom only it is allowed both to say and to do what they please.

'Sometimes the best officers will on these occasions refuse to dissuade from an attack, lest their courage should be called in question. It is highly commendable in those who have opposed a decision, at least to *appear* to approve that which has been resolved on; and, however unwise he may deem the measure, it is the duty of the officer *publicly* to support it: thence it will follow, that the commander, or whoever was the author of the project, loses that irresolution which often occasions a doubt of success. This condescension, which springs from the same source as the firmness before displayed in the council, contributes greatly to the general good; it is an evidence at the same time to those whose advice you had opposed, that your opposition was not the effect of obstinacy, and that while you could support with firmness a sentiment which you deemed just, you also knew how to yield to a decision.' Vol. i. P. 75.

The approbation bestowed on the following fact well becomes the Christian.

'I cannot too often repeat to you, my son, that modesty and humanity are the most shining endowments of an officer. He that possesses religion is modest, because he refers every thing to an arm stronger than his own; he is humane, because humanity and justice are the basis of all religion: these are the qualities which render the soldier patient under fatigue, docile to his superiors, kind to his companions; which, in short, instruct him that life itself is no other than a deposit, which he ought to preserve or to risk only according as the interests of his country require.

'Forgiveness of injuries, and a merciful disposition towards those who have offended us, are not only infallible marks of a great and noble mind, but are our indispensable duty, as reasonable creatures, and peculiarly so as Christians. The following is a fine example of this virtue: Gaston, marquis de Rentz, an illustrious nobleman, was a soldier and a Christian; and had the peculiar felicity to reconcile the seeming opposition between those characters. He had a command in the French army, and had the misfortune to receive a challenge from a person of distinction in the same service. The marquis returned for answer, that he was ready to convince the gentleman that he was in the wrong; or, if he could not convince him, was as ready to ask his pardon. The other, not satisfied with this reply, insisted upon his meeting him with the sword; to which the marquis sent this answer: That he was resolved not to do it, since God and his king had forbidden it; otherwise he would have him know, that all the endeavours he had used to pacify him did not proceed from any fear of him, but of Almighty God, and his displeasure: that he should go every day about his usual business, and, if he did assault him, he would make him repent it. The angry man, not able to provoke the marquis to a duel, and meeting him one day by chance, drew his sword and attacked him: the marquis soon wounded and disarmed both him and his second, with the assistance of a servant who attended him. But then did this truly pious nobleman show the difference betwixt a brutish and a Christian courage; for, leading them to his tent, he refreshed them with wine and cordials, caused their wounds to be dressed, and their swords to be restored to them; then dismissed them with religious and friendly advice; and was never heard to mention the affair afterwards, even to his nearest friends. It was a usual saying with this great man, "that there was more true courage and generosity in bearing and forgiving an injury, for the love of God, than in requiting it with another; in suffering, rather than revenging; because the thing was really more difficult:" adding, "that lions and tigers had courage enough, but it was a brutal courage; whereas that of men should be such as became rational beings and Christians." Vol. ii. p. 67.

Such an anecdote might with propriety be introduced in a sermon: but where is the bishop, who, after stripping off his canonicals, would turn to his brother or his son in uniform,

and say,—Go thou and do likewise? A rash, regardless contempt for individual being is the natural fashion in armies. An interesting anecdote of less equivocal exemplariness is this:

'The late colonel Daniel took great pleasure in giving advice to young officers, guiding them in their military functions, the management of their pay, &c. Whenever he was upon the article of gaming, he used to tell the following story of himself, as a warning to others, and to shew that a little resolution may conquer this absurd passion:—In queen Anne's wars, he was an ensign in the English army then in Spain: but he was so absolutely possessed by this evil, that all duty, and every thing else that prevented his gratifying his darling passion, was to him most grievous: he scarcely allowed himself time for rest; or if he slept, his dreams presented packs of cards to his eyes, and the rattling of dice to his ears:—his meals were neglected, or if he attended them, he looked upon that as so much lost time; he swallowed his meat with precipitation, and hurried again to the dear gaming-table. In one word, he was a professed gamester. For some time, fortune was his friend: and he was so successful, that he has often spread his winnings on the ground, and rolled himself on them, in order that it might be said of him, "he wallowed in gold." Such was his life during a considerable time; but as he often said, and I dare say every considerate man will join with him, "it was the most miserable part of it."—After some time he was ordered on the recruiting duty, and at Barcelona he raised one hundred and fifty recruits for the regiment; though this was left entirely to his serjeant, that he might be more at leisure to attend his darling passion. After some changes of good and ill-luck, fortune declared so openly against him, that in one unlucky run, he was totally stript of the last shilling. In this distress, he applied to a captain of the same regiment with himself, for a loan of ten guineas; which was refused with this speech, "What! lend my money to a professed gamester! No, sir, I must be excused: for I must necessarily lose either my money or my friend; I therefore choose to keep my money." With this taunting refusal he retired to his lodging, where he threw himself on the bed, to lay himself and his sorrows to a momentary rest, during the heat of the day. A gnat, or some such vermin, happening to bite him, he awoke; when his melancholy situation immediately presented itself to him. Without money! and no prospect how to get any to subsist himself and the recruits to the regiment, then at a great distance from him: and should they desert for want of their pay, he must be answerable for it; and he could expect nothing but cashiering for disappointing the queen's service. He had no friend; for he whom he had esteemed so had not only refused to lend him money, but had added taunts to the refusal. He had no acquaintance there; and strangers, he knew, would not let him have so large a sum as was answerable to his real necessity. This naturally led him to reflect seriously on what had induced him to commence gamester; and this he presently perceived was idleness. He had now found the cause, but the cure was still wanting:

how was that to be effected so as to prevent a relapse? Something must be done: some method must be pursued so effectually to employ his time, as to prevent his having any to throw away at gaming. It then occurred to him, that the adjutancy of the regiment was to be disposed of; and this he determined to purchase, as a post the most likely to find him a sufficient and laudable way of passing his time. He had a letter of credit to draw for what sum he pleased for his promotion in the army; but not to throw away idly, or to encourage his extravagance. This was well: but the main difficulty remained, and he must get to the regiment before he could take any steps towards the intended purchase, or draw for the sum to make it with. While he was endeavouring to fall upon some expedient to extricate himself out of this dilemma, his friend, who had refused him in the morning, came to pay him a visit. After a very cool reception on the colonel's side, the other began by asking him, what steps he intended to take to relieve himself from the anxiety he plainly saw he was in? The colonel then told him all that he had thought upon that head, and the resolution he had made of purchasing the adjutancy as soon as he could join the regiment: his friend then getting up and embracing him, said, "My dear Daniel, I refused you in the morning in that abrupt manner in order to bring you to a sense of the dangerous situation you were in, and to make you reflect seriously on the folly of the way of life you had got into. I heartily rejoice it has had the desired effect. Pursue the laudable resolution you have made, for be assured that *idleness and gaming are the ruin of youth*. My purse, as well as my interest and advice, is now at your command; there, take it, and please yourself with what is necessary to subsist yourself and recruits to the regiment." This presently brought the colonel off the bed: and this afternoon's behaviour entirely obliterated the harshness of his friend's refusal in the morning; he now viewed him in the agreeable light of a sincere friend, and for ever after esteemed and found him such. In short, the colonel set off with his recruits for the regiment, where he gained great applause for his success, which, as well as his commission, he had well-nigh lost by one morning's folly: he immediately solicited for, and purchased the adjutancy; and from that day forward never touched cards or dice, but, as they ought to be used, merely for diversion, or to unbend his mind after too close an attention to serious affairs.' P. 93.

These volumes deserve popularity, and are well adapted to attain it. Wherever they circulate, they cannot but leave impressions favourable to the attainment of the liberal qualities. The philosophic teacher would perhaps omit to enforce with much emphasis several virtues which are the highest ornament of the human character, because they are founded on the evolution of dispositions unfavourable to the most essential attributes of military excellence. Tolerance for those foibles, which are the natural overflowings and emanations of the necessary qualifications of a soldier, has been found, both in

Prussia and in France, more expedient than an attempt to purify the soldier into the citizen, which can only terminate in taming ardour; or an attempt to stimulate the citizen into the soldier, which can only terminate in abolishing industry. Each line of life has its appropriate virtues and vices; there is no absurdity in that Hindu morality which draws up a separate code for each.

Of these letters, the first is original; the second coincides with the first chapter of Dubroca's Young Soldier's Guide. This book is, in the main, a translation of Dubroca: some judicious, and some illiberal, curtailments have been made: several anecdotes of English officers have properly been introduced: a few interstitial commentaries are added. It would have been more candid to have acknowledged in a preface the extent of obligation to the French original, than to have passed over in silence all recapitulation of the sources whence this imported preceptor has borrowed his lessons. They are those of a moralist and man of letters, more than those of an experienced officer. This Mentor is not the Pallas of Homer, who guided the car of Diomed; but the Minerva of Fenelon, who warned her pupil against Eucharis.

ART. X.—*Traité Elémentaire de Physique, &c.* Paris.

An Elementary Treatise on Natural Philosophy. By R. J. Haüy, Member of the National Institute, &c. designed for the Instruction of the National Lycæum. 2 Vols. 8vo. with 24 Plates. Imported by De Boffe.

A SYSTEM of natural philosophy, by Haüy, must be interesting; and, while a work in our own language, on this branch of science, is under our consideration, we were more particularly attracted by its rival from a rival country. We have examined it with peculiar satisfaction, and shall now present an abstract of it within as narrow limits as its importance will permit.

The object of the author seems to have been, to offer a general abstract of the science, and not a compilation in which every former theory is proposed, but none examined. For this reason he only adduces the most decisive experiments, unfolding with peculiar care the consequences of their results.

'An explanation,' says he, 'becomes vague, when it is too general. Details are the touchstone of theories: they demonstrate their truth, or display their errors: they enable us to follow step by step the progress of nature: they point out all the relations which establish the mutual dependence of facts, either with each other, or with that which forms the basis of the theory.'

In an introduction which displays considerable ability, the author gives a general view of this science. The objects, he remarks, are more interesting, because they call our attention to what passes around us; for our instruments afford us only miniature exhibitions of the great phænomena of nature, conducted in a way that leads us to explain their cause. 'Instruments, so varied, are only so many interpreters of the language in which *nature* constantly addresses us.' The word 'nature,' he adds, 'is only a short form of expressing sometimes the results of the laws to which the mechanism of the universe is submitted, by the supreme Being; sometimes the collection of beings created by him. Nature thus, in its true light, is no longer a subject of cold unproductive speculation, with respect to morality. The study of its productions and its phænomena not only enlightens the mind, but warms the heart, by exciting feelings of respect and admiration, at the sight of so many wonders, which bear such striking characters of infinite power and wisdom.'

We record these sentiments with peculiar pleasure, in a work undertaken by the command of the first consul, and in a city where infidelity has established her strongest hold. Perhaps natural philosophy has not before assumed a scientific form. Works of this kind have been a collection of treatises, not a whole; and since these treatises have been published, the science has accumulated, though not always with advantage; for fancy and refinement have occasionally presided, where observation and judgement should have led the way. 'The sciences which relate to nature are one and the same: they appear various in their objects: they approach, diverge, and cross each other: they sometimes invade the confines of their neighbours, as if to recall to our minds that the source is alike, and that our distinctions arise only from the limits of our views, and the time allotted us for the cultivation.'

'If we consider in bodies,' says M. Haüy, 'their general and permanent properties, or if the changes that these bodies undergo are slight, and that they return to their former state when the cause ceases to act; if also the laws, which determine the reciprocal actions of the same bodies, are propagated to distances more or less considerable, the results of our observations are still within the dominions of natural philosophy: but, when the phænomena depend on the ultimate action which the molecules exert on each other at distances almost infinitely small, by reason of which the molecules separate, to unite again in a different order, forming new combinations, with new properties, the study of the phænomena belongs to chemistry.'

We have selected this passage with more pleasure, as it limits the boundaries of natural philosophy and chemistry with singular precision, according in a great measure with the definitions we have had occasion to offer.

After explaining the term *theory*, which strictly means the connexion of particular facts, either with one general fact, or at least the smallest number possible of facts, and illustrating his definition by examples drawn from the history of philosophy, the author proceeds to the subject itself. He first explains the most general properties of bodies, beginning with those which approach most nearly to the nature of those bodies considered as simple assemblages of material particles. These are, extent, impenetrability, and divisibility. The other general properties depend on certain powers which affect bodies, as gravitation and affinity.

Having stated the laws which influence falling bodies, the author compares affinity with gravity, and shows how each may be reduced to the same principle, by adopting the happy idea of De la Place, which consists in supposing, that the distances between the molecules of bodies are infinitely greater than the diameter of these molecules. Numerous phænomena, and, among others, the extreme facility with which the rays of light penetrate transparent bodies in every direction, support this theory. On the subject of specific gravity, the author explains the method which has been followed in the determination of the unity of weight, in the new metrical system; to this explanation is added a short view of the whole system, taken in its greatest extent. With respect to affinity, M. Haüy has engaged in the illustration of a theory relative to one of its most remarkable consequences, viz. the symmetrical arrangement of the molecules of some of the natural bodies, we mean the detail of the results of that happy union of geometry and mineralogy, which has been applied to illustrate the forms of crystals, in which M. Haüy has so eminently succeeded. The explanation of the various subjects which properly belong to general physics is terminated by the consideration of heat, which balances affinity, and often destroys its power. M. Haüy illustrates, in succession, the equilibrium of heat; the manner in which a part of this fluid, if it be a fluid, combines with the body, while the rest escapes in a radiant form; specific heat; the effect of caloric in dilating bodies, rendering them liquid or gaseous. He then engages in some interesting details, relative to the variation of bulk of solid and liquid bodies; the latter subject leading to the thermometer, and the principles on which it is constructed.

M. Haüy proceeds to particular physics, and these relate to certain fluids remarkable for their mode of action. The first of these is *water*, which he considers first in its common state; and this leads him to the principles of hygrometry, to explain the phænomena of capillary tubes, and the apparent attractions and repulsions of the little bodies which float on water at a small distance from each other. He then considers it in the

state of ice, and gives the history of the congelation of mercury, with the means by which the degree of cold to which it corresponds has been ascertained. He next examines water in the state of vapour, and points out the advantages which mechanics have derived from its expansive force.

The properties of air follow, and the author considers its weight, its elasticity, the effects of its pressure in raising the mercury in the barometer, water in pumps, and in the syphon. He next gives a very elegant and simple demonstration of the law, according to which the densities of the strata of air decrease in proportion to their distance from the earth, and applies this law to the methods hitherto employed for measuring heights by the barometer; at the same time pointing out the corrections which this method requires, and explaining a new plan, suggested by La Place, to assist a similar kind of observations. This plan is particularly advantageous, as more easy and direct, and will be complete, when the determination of the quantities which form its base shall be taken with the greatest precision. This interesting portion of the work concludes by explaining a very ingenious idea of the same author, to connect barometrical observations with geographical measures, to determine more certainly the position of different places.

After considering the weight and elasticity of the air, the author treats of the effects of caloric in dilating it, or increasing its elasticity. On the first part of the subject, he explains the new experiments, which have led to a determination of the relation according to which all the gases dilate, from the freezing point to that of boiling water. Evaporation is the next subject, or, in the author's view, the union of water with air. M. Haüy points out the law of dilatation, which takes place when gases and vapours are mixed. He then adds some details on winds and watery vapours; and returning to the effects of evaporation, as the source of springs, he gives the history of this discovery, and of aërostatics, which he thinks may lead to the most important consequences.

Air is next considered as the medium of sound. M. Haüy first explains the general phænomena of sonorous bodies, and next passes to the comparison of appreciable sounds, drawing thence observations relative to the effects of wind-instruments, with the theory of the propagation of sound. It is easy to see that the author has particularly studied that science, whose object is music.

Electrical phænomena then fix M. Haüy's attention, and this subject is pursued to an extent proportioned to its importance. He first treats of the electricity produced either by friction or communication; and having established the distinction which

exists between different bodies, with relation to this mode of electrisation, he explains with peculiar clearness and precision the general theory of electrical phænomena. The property which some bodies possess of acquiring electricity by means of heat, has furnished many interesting details on the electrical action of these bodies, and the coincidence observable between their forms, and the positions of the poles, in which the two opposite electricities reside. If we owe to Æpinus the explanation of the cause of the phænomena which the tourmaline presents when properly warmed, we are equally indebted to the present author for an explanation which so happily connects electricity with magnetism.

To this part belongs Galvanic electricity, or the electricity produced by the simple contact of bodies, first discovered at Pavia, and extended considerably in the same part of Europe by Volta. This article is admirably written. After detailing the discoveries of Galvani and Volta, the author speaks of the electrical fish, whose properties seem to depend on a structure analogous to the elements of the Voltaic pile. Galvanic electricity is connected with chemistry by its power of decomposing water; and from this principle the author connects in one point of view all the other resemblances, which show that this electricity by contact is no more than a simple modification of common electricity.

The similarity between the laws which influence bodies that have received the magnetic power, and the electrics *per se*, naturally places the theory of magnetism next to that of electricity. Æpinus, on this subject, first employed simple powers, submitted to calculation.

'It was,' says the author, 'in holding a tourmaline, that he first conceived the idea which formed the basis of his theory. He had discovered that the properties of this stone were owing to electricity, and had remarked that it repelled on one side, and attracted on the other, a small electrified body: he gave these two sides the name of poles, and this term, which might only pass for a more convenient expression, became in his mind the true word. He saw, in the tourmaline, a little electric loadstone; and comparing the phænomena of magnets with electrics *per se*, he found that the action of the two fluids might be reduced to the same laws, and thus joined to the merit of having perfected the theory of electricity, and created, as it were, the theory of magnetism, that of joining to the same ring two large portions of the chain of our knowledge.'

The theory of magnetism is explained, in the treatise before us, in a manner wholly new, and with that precision which characterises all the works of M. Haüy. In pointing out the attempts of philosophers, the author might have had frequent occasion of quoting his own works, if he had not confined him-

self to a simple explanation of the results to which his own works had conducted him.

M. Haüy treats of magnetic and of electrical phænomena, as produced by the simultaneous action of two fluids. Having explained the principles on which the basis of his theory rests, he points out the method which has been followed to determine the law of magnetic actions at a distance: he then proceeds to the explanation of the effects which the bodies that have received the magnetic virtue produce, viz. attraction and repulsion, and is particularly anxious to explain the apparent paradoxes which many of these effects offer: lastly follow the applications of this theory to the production of artificial magnets.

The phænomena produced by the magnetism of our globe are next explained, with whatever theory or observation has taught relative to the declination and inclination of the magnetic needle, to the changes of each, to the local and transitory perturbations sometimes observed, styled oscillations. In a separate article, the state of habitual magnetism, which the different mines of iron in the earth experience, in consequence of the magnetic action of the globe, is examined. The subject is terminated by a reflexion which naturally arises from it.

'Magnetism appears not to exist in the absence of iron, and yet an unexpected discovery has shown, that it required only its own aid to procure us the most important services; that, under the appearance of a simple amusement, it concealed at that time an inestimable present for the service of navigation. From that period, all the resources of the most refined philosophy have been employed, to augment the power of the mariner's needle, and render it more obedient to the action of the earth. Though a scientific object, therefore, may seem at first to lead only to idle speculations, this is not a motive to condemn it to oblivion. Independent of the more obvious result, that of exercising the sagacity, and employing the reasoning faculty, these acquisitions often serve to explain common truths, connected, and sometimes lead us to a more perfect acquaintance with them. Besides this, they may discover in their turn some concealed advantage, which will be in time apparent; and the moments we bestow on them, perhaps hasten the period when they may contribute to the good of society.'

The author has reserved for the conclusion the most intricate of the theories, that which relates to light. 'After having explained,' says he, 'the various phænomena produced by the fluids spread around us, and in the regions nearest to our globe, we shall now rise to the consideration of light, which has its source in the stars, and whose action embraces the whole sphere of the universe.'

M. Haüy first examines the two opinions, one of which makes light consist in an emanation of luminous particles; and

the other in a fluid vibrating by the action of the same bodies. He determines, for the reasons assigned, in favour of the former; and having explained the method employed to measure the velocity of light, he describes the aurora borealis merely as a luminous phænomenon.

M. Haüy next explains the laws of reflexion and refraction. He considers the relations which these two kinds of deviation have to each other, and shows how we may reduce the physical explanation of each to an action of the same kind with those which are exercised at distances almost infinitely small; an action the same as that known by inflexion or 'diffraction' of light. To complete the theory of the powers which these bodies exert on the luminous fluid, M. Haüy points out the results by whose assistance Newton read in the laws of refraction, combined with the densities of bodies, that the diamond was a combustible, and that water contained the inflammable principle.

The discoveries of Newton on the nature of light, considered as a mixture of an infinite number of rays, differently refrangible, and offering, in their colours, an imperceptible gradation of shades, related to seven principal ones, follow. These considerations lead to the rainbow, and the consequences which Newton drew from the coloured rings, applied to the natural colour of different substances, and the difference between opaque and transparent bodies. The phænomena of vision form the next subject; the structure of the eye is described; and this organ is considered in a more extensive view, as, under the guidance of the touch, acquiring an experience which enables us to judge of the forms, size, and distance of objects. The defect of any of the conditions which suppose the same rules, leads the eye into errors called 'optical illusions.'

To the effects of natural vision succeed those of artificial.

'The laws of reflexion teach us,' says the author, 'how the images of objects, such as presented by mirrors, are produced. We then see (adds he) the effects of light refracted, with respect to vision; and supposing, at first, a refracting medium with a plane surface, and a radiant point placed within it, we shall consider the question relative to the determination of the imaginary point of meeting of the rays, which, after leaving the radiant point, disperse, and again meet by the effect of the refraction they experience in passing through a different medium.'

Having applied this theory to the vision of objects situated in the water, he refers the remarkable property of the double refraction to it, and then details the beautiful theory, by which he has explained the double refraction of carbonate of lime. The article concludes with an explanation of the effects of simple glasses, which, by means of their curvature, assist our

sight, or remedy its imperfections. The theory of these effects leads to an explanation of those produced by different instruments, as telescopes, microscopes, &c.; and he points out, with the greatest perspicuity and precision, the principle on which the achromatic telescope is founded,—an invention long retarded, as it has been said, by the obstacle seemingly opposed, viz. the authority of Newton.

We greatly regret, that at the end of an appendix we have been compelled to confine our analysis within such narrow limits, almost to a general view of the contents. As we much wish to see this work in our own language, and as it well merits a translation, we may be able to return to it. It will be at once obvious, that some of the subjects included in English treatises of natural philosophy are omitted, particularly the minuter mechanical details, and astronomy. Whether these do not make a part of the philosophic courses of the Lycæum, or whether they could not be conveniently included in our author's general sytem, we know not: probably the former circumstance confined M. Haüy's labours to a narrower compass. On the whole, we have not yet seen a treatise on natural philosophy which approached so nearly to a systematic form; no one completed with so much care, comprehending such a variety of details, finished with more philosophic accuracy.

ART. XI.—*The Hindoostanee Intelligencer, and Oriental Anthology.* 4*to.* 13*s.* 6*d.* Imported by Debrett. 1803.

WHAT Alexandria was in the time of the Ptolemies, Calcutta has the prospect of being, in the course of the present century. In point of architectural magnificence, its houses are palaces; and in point of literature, since the institution of an oriental college within its boundaries, its proficiency, though at present immature, is advancing rapidly towards perfection. Thus situated, it cannot but be expected that there should be a considerable demand for indigenous as well as exotic periodical publications; or that fascicules of this description, when well conducted, may be sure of meeting with an ample reward Following the example of the Hircarrah, or Newsman of Bengal, though not exactly conducted on the same plan, 'The Hindoostanee Intelligencer' has lately been established at Calcutta by a proprietor whose name we are unacquainted with, but whose taste and spirit are well entitled to encouragement. Of this oriental magazine we have received only the first four numbers: they are printed in quarto, with double pages, and severally contain six sheets: they appear to be circulated monthly; but as they are merely distinguished by their respec-

tive numbers, and not by the periods of their publication, we cannot be certain upon this point.

Their contents consist of literary essays, and the politics of the day. It does not, however, seem to be the intention of the editor to extend his political department beyond the limits of India; or to engage in the science as a partisan. His office, on the contrary, is confined to historic paragraphs alone; and he appears to introduce them with candour and fidelity. The journal, so far as we are capable of deciding, commenced rather more than two years ago; the first number being dated 1801, and its latest communications extending to the middle of September in the same year. The letters, or essays, extracted from the Bengal Hircarrah, are for the most part respectable; they are alternately literary, humorous, and moral.

We are not surprised to find the *reformed orthography* here introduced, and carried to its wildest latitude—a latitude, indeed, that renders it necessary for the English reader, while he fondly flatters himself he is perusing his own mother tongue, to be deeply versed in Mr. Gilchrist's system of *Hindoostanee* or Persian grammar, before he can possibly comprehend the name of the place or personage discussed. This orthographic *improvement* upon sir William Jones does not, however, appear to have met with universal acceptation, and hence nothing can exceed the variation with which the same word is spelt by different correspondents: a variation, indeed, which completely destroys all unity of composition, and frequently sets all etymology at defiance. Thus, while those who adhere to the orthography of the editor of the Bengal Journal, so freely and frequently copied in the publication before us, write it *Hircarrah*, those who are attached to the rules of sir William Jones spell it *Harcārah*; and those, again, who have been educated in the school of Mr. Gilchrist decipher it *Hurkaru*. For the same reason, we sometimes meet with *raja*, and at other times with *raọ*. With the territories of the *Deccan*, or the cities of *Delhi* and *Lucknou*, most of our readers are acquainted; but who of them, unversed in the *new nomenclature*, would expect to find these places under the words *Duk̔hun*, *Dihlee*, and *Luk̔nou?* The *bramin* is here converted into a *bruhmun:* and while our own parliamentary debates, or rather the newspapers that relate them, introduce to our acquaintance the names of *Raja Holkar* and *Raja Scindea;* if we wish to know any thing of these personages in the Hindoostanee Intelligencer, we must search for them under the more fashionable orthographic masquerade of *Juswunt Raọ Holkur*, *Doulut Raọ Send̔heeạ*. The following short paragraph will fully justify our observation:

'September 22d. *Mohun Lal* related that *Doulut Ra,o Send,hee,a* has written repeatedly of late to *general Perron*, urging him, by every means in his power, to send him *Luk,hwajee* either dead or alive. The general is meditating a reply; but his wish is to bring about a reconciliation between *Send,hee,a* and *Ba,ee*.

o

'The king despatched a *shooqqu* to the *peshwa*, recommending that he endeavour to reconcile *Doulut Ra,o Send,hee,a*, that so the house of the late *putyl*, who was a faithful servant of the crown, may flourish.

'24th. Papers from the *Duk,hun* mention that *Doulut Ra,o Send,hee,a's* army is still encamped on the *Nurbuda*, and he is entertaining fresh levies every day. *Juswunt Ra,o Holkur* also maintains his former position. *Send,hee,a* waits the arrival of *Umbajee* and *general Perron*. *Holkur* has sent *Meer Khan* in advance. But in the mean time a treaty of reconciliation is on foot, by the intervention of the brother of *Ub,ha Chit-nuvees* and *Ram Ra,o Bh,ao*. An interval of thirteen days is agreed on, to try the effect of negociation.' P. 11.

This kind of orthography, with its diacritic symbols, superscripts, interscripts, and subscripts, can only be employed for the benefit of the *English* reader, who, nevertheless, must be necessarily unacquainted with the use and intention of the ornaments thus crowded on his eye, unless he have fortunately studied some of our modern elemental books in the Persian or Hindustanee tongue, and have consequently ceased to be a mere English reader, by his initiation into these languages. But what will the plain unlettered Englishman say, when he learns that these symbols, and this orthographic jargon, which he himself is well aware are not English, are at the same time neither Persian, Arabic, nor Hindustanee; neither Pahlavi nor Sanscrit; or, according to our modern reformers, neither *Puhluwee* nor *Sunskreet;* but the mere fanciful invention of a few individual writers, to convey certain vocal sounds from one language to another with, what they are induced to suppose, a greater degree of precision. Were this plan to be pursued much further, we should soon have our plain English, or rather Roman, alphabet so bespattered with *hamzas*, *meddas*, and *teshdids*, *fettas*, *kessrs*, and *zums*, that it would be as difficult to comprehend it as a Hebrew Masora, when accompanied with its whole train of *sakeph-hatons* and *sakeph-gadols*, *pashtas* and *karneparas*, *shalshaleths* and *mercak-phephalas*, and the other barbarous symbols that complete its entire host of *regal* and *ministerial* attendants, as they are denominated by the Hebrew grammarians; concerning a critical knowledge of whose use Bohlius is said to have consumed not less than seven years, without having been able, even at last, to accomplish his object. The employment of a superscript *o*, which so frequently occurs in the pages before us,

and of which there is an instance in the word *shooggu*, in the passage just selected, is at all times, as it appears to us, a work of supererogation; for if it be designed to intimate that the original character employed is a و *(u)*, but that in pronunciation this *u* should assume the vocal value of an English *oo*, the idea is already expressed by the mode in which the word would remain to be spelt, if the superscript *o* were to be expunged. The Asiatic title commonly written and pronounced by ourselves *nabob*, is here, we perceive, almost uniformly exchanged for *nuwab*; than which nothing, in our apprehension, can be more absurd. *Nuwab*, *nabob*, or, as sir William Jones would write it, *navâb*, (نواب) is the *plural* of an Arabic noun, and signifies *viceroys*: it is unquestionably, therefore, applied improperly by ourselves to an individual: but if it must be rectified, as it is here attempted to be, why is it not rectified by the adoption of the *singular* instead of the *plural* number? Why does not the editor write *nayib* or *nayub* (نايب), *a* or *the viceroy*, when speaking of *Ghazee-ud-deen Khan*, or any other single chief, instead of *nuwab?* which is a mere alteration without a correction, or rather a pretended correction in orthography without a correction in grammar.

We have dwelt at some length on these objections, because we wish well to the publication before us; and because we perceive, among English orientalists, a too prevalent disposition to a kind of new and more fashionable orthographic nomenclature, equally unnecessary and unnatural. The essays contained in the different numbers before us are occasionally in prose, and occasionally in poetry; at times moral, and at times philologic or critical. Of the prose papers, we are best pleased with one on the origin of printing, subscribed Scoto-Britannus, and inserted in N° II, p. 11: upon which subject, however, we recommend to the perusal of the ingenious author an elaborate treatise on the same subject, by M. Camus, inserted in the Memoirs of the National Institute of France, class of Literature and Polite Arts, vol. iii.; and one inserted p. 1, N° III, on the question which lately agitated many of our scholars at home, concerning the date of the commencement of the present century. In this latter essay, the problem is elaborately discussed, and the author evinces a very respectable knowledge of history both sacred and profane. The poetic effusions consist almost exclusively of translations of various gazels of Hafiz; of which we have been well pleased with several rival versions, in the first and second numbers, of a gazel addressed to the poet's soul, and which bears no small

resemblance to Hadrian's upon the same subject; or Pope's very elegant imitation of it. To this, however, we prefer a selection of the following letter to the editor, because it contains a specimen of Persian poetry, in a measure not so generally known to Europeans as that of the gazel or elegy.

'Mr. Editor,

'Of the shorter poems of Hafiz you are likely I see to have plenty of translations, of which, as I observe them in print, I shall transmit you my verbal translations without comment or remark. What I now send is out of the common track; and may on this account, independently of its own intrinsic merit, prove acceptable to your Perso-literary readers. But as the form of it differs considerably from that of the ode and elegy, it may not be amiss to explain it in the first instance. Of those the Moatla or opening distich has a consonant terminating syllable; and this corresponds in the second line of every distich throughout the poem; whilst the first line of the successive distichs, so long as it agrees in its metre, is indifferent to the other. In the specimen, which I am about to offer, this rule may be said to be amplified; for the strophes instead of distichs are pentastichs; the first strophe, like the first distich of the ode and elegy, having all its five lines terminated with the same rhyme, which is repeated in every fifth or pentastico-terminating line of the poem, whilst the four first lines of the respective pentastichs have their special or tetrastic corresponding rhyme; but like the first line of the second and progressive distichs of the ode and elegy, those four first lines of the second and progressive strophes of the pentastichs have no similitude in the ending syllable with each other; nor indeed correspond with the other parts of the poem farther than by continuing the sense and supporting a uniformity of measure; which the whole in fact do, in a very minute, laboured and yet harmonious manner. As the nature of their language more readily admitted of it, the Italian poets borrowed, I should suspect, from the last, a good deal of this diversity of termination. But other European nations might find, could their languages likewise admit of it, that composition could after this fashion be refined, till the difficulty might overbalance any benefit. Let not, however, what has been said detract from Hafiz's or rather Sadi's credit, in the opinion of men of learning and wit, who may not understand the originals; for in the specimens of both, which I am about to exhibit, they display an execution of the poetic art exquisitely fine and wonderfully great!

'Mukhammese Hafiz.

'*Hafiz's Pentastich Poem.*

'1. To that degree, oh my love, am I enamoured of thee, that I stand in doubt of my own existence; yet miserable and desperate as my condition is, could I be endued with a thousand lives, I would sacrifice the whole, at thy auspicious feet.

'2. Proclaim it, oh Fortune, that in my enthusiastic devotion I will unfold the secrets of my heart before a soul-exhilarating pre-

sence like thine; yet oh! alas! can such a royal falcon, as thou art, honour with a visit my humble nest?

'3. Notwithstanding that tyranny be thy nature, refrain from such a violence as can do no good; for allowing that thy heart is composed of iron and brass, finally, oh my charmer! take thy walk over my head, and consider my body as the dust of thy threshold.

'4. I said, when thou madest me the victim of thy cruelty, After this thou mayst deign to show me some pity, and stamp upon thy heart the sign of fidelity; verily thou never wilt be reconciled to visit me so far; I am made sensible of my own wretched lot.

'5. More than good faith I cannot desire of thee, from the rose I scent only the fragrance of fidelity; unless I take the path of servitude (i. e. resign my life), I neither can divulge thy secrets to others, nor commemorate to them thy praises.

'6. Behold! since we opened the door of attachment, did we not heap affection upon affection?—what instances of tenderness were mutually exchanged, were they not still kept secret between us, till thy engagement was violated? but I remain constant.

'7. Oh thou! that art alike armed against foe and friend, who wadest through the blood of barbarian and citizen, within the dwelling of thy most devoted slave, notwithstanding it be the hut of gloom and despair, I will find a luminary in thy lustrous eye.

'8. Wert thou to sever my head with a sharp sword, I would not quit the street of thy attachment; or were they to cut me into atoms, I would not break the seal of thy affection, until my bones were crumbled into dust.

'9. Were the ogles of thy eye to pierce me with arrows, or the ringlets of thy hair to bind me as a prisoner, I would not have a moment's release from pain; I never can agree to forsake thy society, until the soul be separated from my body.

'10. Such as are in quest of a token of constancy, have only to take the way to my sepulchre; there in sympathy of my pain, when they scent my dust, and call upon thy name over my head, then will my soul answer them with groans.

'11. Were I to march through troops of damsels, each of them outshining Canopus in splendour, it were alone for thee that I could feel any passion; I am Mujnoon, and in compensation for Laily would not accept of the kingdoms of Arabia and Persia.

'12. From desiring thee I became, oh my idol! gloomy and distracted as thy sable locks; though I cannot reach the street of thy abode, not a night is passing that in thy absent charms I raise not my moans up to the lofty heavens.

'13. Thy society, my love, is the source of my festivity, long mayst thou enjoy the object of the heart, oblige Hafiz with thy personal commands, what orders it may please thee to impose are easy of obedience, only do not drive me from thy presence.'

'The poem of Sadi of which this pentastich of Hafiz is in imitation, is the last of the Ketábe Turjeeat ركابي رباعيات; but Hafiz has amplified the idea of Sadi, by making the tetrastic strophes of the later pentastichs; otherwise in form and sentiment they are

very much alike. I shall quote the two first stanzas of Sadi's poem; and give a translation of the whole. Indeed, Mr. Editor, if you think it worth your trouble, you can also copy the whole of the original from the 2d vol. of the Kuleeate Shaikh Sadi, printed in Calcutta in 1791, page 263; a work that requires in any part but little emendation.

'1. In vows to thee, oh heart-deluding idol! many is the oath and troth they will break; upon a soul so worthy and desirous of thy love, after this be not so harsh and cruel.

'2. None else have I seen so beautiful as thou art, oh lovely princess, of all that hath being! the heart could not covet any charmer but thee, whose lot it had been to be enamoured of thine.

'3. Absent I have not patience to rest quiet, present I have not tongue to speak, path I discern not any to lead me from thy sight, but round thee I hover like a fly about sugar.

'4. For thee none was needed to teach me affection, the moth is industrious to its own destruction: love urged me on and sealed up the eye of reason; passion came along and tore up the root of forbearance.

'5. The existence of thee occurred as a rarity, God had not bestowed such beauty on any body, never had a mother in any former time brought forth a child so handsome as thou art.

'6. Oh eye and luminary, thou wonder of mankind! after having shed my blood what farther dost thou intend? This violence how long am I to endure; this torture to what extremity to bear?

'7. The pang of a sigh every moment escapes me, moan or lamentation nought avails me, prostrate I fell, and such was my reprehension, man takes not warning till immured in a prison.

'8. My heart and the rein of self-command were gone, on poured a deluge and the flood-gate was not to be shut; if she be present I no longer have being, absent from my charmer I feel joy in recollecting her.

'9 The sun is thy cheek, the cypress thy stature, engraven on my heart their forms last forever; reproach in my ear whispers light as the Zephyr, the grief of separation bears heavy as Mount Alvend.

'10. After thee are gone my heart and religion, also thou would'st claim the soul of my enthusiasm, this I feel a duty and more even than this, peradventure like the heroes of the faith I may attain the gift of comprehension.

" Down I will seat myself and make patience my study, close I will keep myself to this special duty."

'The last two lines are the burthen of each of the poems of the Ketâbe Turjeeat; which in recitation (for, like the secular odes of Horace and Pindar, poems of this sort were intended to be sung) must have had a good effect.'

ART. XII. *A New Theory and Prospectus of the Persian Verbs, with their Hindoostanee Synonymes in Persian and English. By John Gilchrist.* 4*to.* 10*s.* 6*d.* Imported by Debrett.

THE etymologist who carries his researches through a variety of languages, of whatever age or quarter of the globe, is necessarily struck with the multiplicity of univocal synonymes which he is perpetually meeting; and hence it cannot be surprising that a number of idle and visionary theories should be built upon this grammatical phasis alone. Yet there is one conclusion which appears incontestable, and strongly concurs in proof of the Mosaic (or that which has been generally regarded as the Mosaic) origin of mankind; we mean their descent from one common stock, an the use of one common language in the earliest æras of the world. Of the peculiar institutes of this primæval grammar we know little—of its lexicon we know nothing: but from the multifarious appearances of similar radicals in a variety of languages, we have a right to infer that such radicals constituted distinct portions of this primæval tongue of the common ancestors of mankind, and have accompanied their posterity amidst all their various dispersions and political changes; still proving an uniform, coetaneous, and elementary origin. In a variety of instances, this similarity of sound and meaning, we grant, may be altogether fortuitous, as in the Persian and English first person of the indicative mood present tense of the verb بودن (buden) *to be*, which in both instances is ام or *am:* but there are other cases in which it would be absurd to attribute such univocalities to accident alone. Thus, we might instance the pronouns تو (tu); in Greek συ or τυ (su or tu); in Latin, and all its immediate derivations, *tu;* in German *du;* in English *thou:*—and كه or چه (he or che), of which the former usually relates to persons and the latter to things, compared with the Latin or ancient Italian *qui*, *quæ*—the modern Italian *chi*, *che*—and the French, Spanish, and Portuguese, *qui*, *que*, or *quien*. So also the nouns مادہ (madé) a *female*, compared with the English *maid* or *maiden*, and the German *magd* or *mägde:* پسر (puser) a *boy*, compared with the Latin *pusus*, *pusillus*, of similar meaning; whence *pusa* a *girl*, and the French synonyme *la pucelle:* سر (sir) a *head*, *lord* or *master*, compared with the Greek κυριος (*kyr*-ios or *cyr*-ios) of similar meaning; whence the French *sieur*, *monsieur*, or, as it was formerly written, *moncyeur*, and the other

modern European synonymes *sir*, *sior*, *signor*, *seignor*. Similar examples might be selected, sufficient to fill volumes; not merely from the languages to which we have now confined ourselves, but from every known tongue on the face of the globe: and the coincidences which they exhibit, cannot but indicate a community and coetaneity of origin.

But here we must be permitted to pause. There are, however, a variety of etymologists who advance much further; and fancifully attribute to certain individual letters of the alphabet a sort of etymologic necessity of conveying certain definite ideas, wherever such alphabetic signs may make their appearance. We had occasion to animadvert upon this visionary hypothesis when lately reviewing Mr. Whiter's Etymologicon Magnum; and in the theory before us, we perceive that Mr. Gilchrist is not altogether devoid of a similar imagination. Thus in his introduction:

'In the Latin it strikes me we shall find *eo*, *sto*, *do*, *ago*, *meo*, *capio*, and several others, the grand primordial verbs, similar to *un*, *udun*, *cedun*, *oodun*, *utun*, *usun*, *ustun*, *hustun*, *shoodun*, *yaftun*, in the Persian, and *un*, *na*, *ana*, *jana*, *hona*, *kunna*, *keena*, *kurna*, *anna*, *bunna*, *tanna*? *tana*? *lana*, *arna*, *dena*, *k,hana*, *pana*, *purna*, *lena*, *manna*, &c. in the Hindoostanee. The present hint will probably lead to considerable discoveries in both oriental and occidental philology. I shall therefore exhibit here a few of the most incontestable examples of this hypothesis, in the Hindoostanee language. When some of the scholars who have already gained so much credit for Sunskrit lore, shall liberally pave the way for the progress of others, by publishing *a rudiments*, introduction or grammar of that ancient, but artificial, language, the public may yet be enabled to decide how far my present conjectures are well founded. That they encroach on the Sunskrit *roots* I am well aware, and I may yet, from this conviction, extend my researches into the radical department of that wonderful language, should any able literary pioneer previously condescend to clear away the pedantic rubbish, which ages have accumulated in the very vestibule of this divine tongue. To begin with *hu*-na, *ho*-na, to *breathe*, *exist*, *be*; *t,hoo-kna*, to make the natural effort *t,hoo* i. e. *to spit*; p,hoo-kna, to *p,hoo* or rather *to blow*; p,hoo-*lna*, to bring or produce *p,hoo*, *to bloom*, bo-*lna*, to *bu bu*, or *speak* as children do, whence they are called *baba*, *babe*, *baby*, in several tongues; k,ho-*dna* to give or cause *k,ho*, the radical expressive of *cavity*, meaning *to dig*; k,ho-*lna*, to produce *k,ho*, *to open*; ju-*rna*, ga-*rna*, *to fix*, *set*, *bury*, &c. from *ju*, *gu* the root of *motion*, *going*, and *arna*, *to stop*, *arrest*; so-*hna*, *to suit*, *fit*, *become*, from *soo*, *good*, and *huna*, *hona*, *to be*. These observations might be extended amazingly; and however absurd they must appear to many people now, the day may yet come when my notions will not seem so visionary as they do at present. In this stage of philological research, I know that the in-

telligent few only can descry, through the sable mantle of time, the glimmering traces, in this rude sketch, of an original nomenclature, that once shone with meridian splendour among the sons of men. How, when, or by whom formed, are questions that perhaps some future Newton in the province of speech may be able to solve, provided data continue to accumulate, and thus help the intuitive sagacity of such a man, to a discovery which will fall little short of being in reality divine. The human soul delights in the contemplation of its ability to approximate even those truths, which are perhaps for ever out of the reach of mere mortals; and this very sensation is in fact one of the surest indications of its immortal origin, and undisputed superiority to the brute creation. From the examples produced, if the learner will recollect the analytical and synthetic mode of examining Hindoostanee verbs, he will be at no loss, when we know the Sunskrit roots, to trace apparently primitive verbs, to their various sources, as I have just done. By attending particularly to the penult of those infinitives, we shall in general perceive that *n, j, h, nn, b, t, t, k, ch, l, r, d, ḳ,h, p, m,* almost invariably denote *ana, jana, hona, anna, kurna, keena, ḳ,hana,* &c. already enumerated, superadded to the *d,hat* or primitive word, as *t,hoo, p,hoo,* in *t,hoo-kna, p,hoo-lna.* If any person should insist on *matter* preceding motion, and argue, that *t,hook, spittle,* exists before the natural sound can be formed, I beg leave to answer, that this particular humour may absolutely receive its name from the action that discharges it, in the very same way that *p,hool* is probably termed a *flower, flos, bloom,* from the nature of its *blowing,* or being puffed into the form it assumes as a p,hoo-*l* or blow-*er.* I shall not detain the reader with a discussion here of the extensive powers which *k, r, l,* and others possess under certain modifications, as *uk, ak, ka, aka, ur, ra, ara, ul, al, ala,* when used as adventitious particles in the Hindoostanee, because, the smallest analytical experience in it will produce a thousand instances in proof of my assertions. Whoever shall examine the Persian also, on these principles, will in the end, I am confident, perceive that his labour has not been lost in acquiring a radical knowledge of the ancient dialect or *Puhluwee* tongue. Nay, I am convinced, that the same process is applicable with the most satisfactory effects to the Latin also, and many other languages.' P. XV.

Again, on opening the text of his theory with the importance of the short *ă* or *u,* as to all abstract existence whether mental or ideal, he thus proceeds:

'When mental and corporeal existence were palpably combined, another infinitive, to wit the material, may have become requisite, and we may reasonably presume that *st-un, ust-un,* or *ist-un, ist-um, ist-ee, ist-ud,* &c. were introduced accordingly. We all know that in several languages the letters *st,* or as a Persian must write them *ust, ist,* denote stability, station, &c.; nay, we cannot be ignorant that this very *stun, istun,* in question, is the final syllable of several verbs yet extant. The man who understands the Persian language, and can analyse the verbs *dan-istun, giree-stun, zee-stun,* &c.,

will clearly perceive, that these are irrefragable proofs of the present supposition being so far well founded; nor is it a very incongruous conjecture, that from this dormant material infinitive *istun*, *istadun* may proceed; having, like many others, survived the aorist infinitives whence they sprung.' P. 2.

To these observations is appended the following curious note, which, if it deviate from the rigidity of sober etymology, is at least pregnant with the wit of the verbal punster:

'A philosophic eye ever *awake* to general principles, will perceive in the text the evident connexion between our *stood* and the Persian *istud*, though a long period may elapse before superficial observers can *wake* to discoveries of this sort. The objection that *stood* and *stud* are in different tenses, is nothing to men who beat in fair argument those to day who beat them yesterday, and who are fully aware, by having read already similar remarks to those they now read, of the strange intermixture of tenses in all languages, especially when these are primitive and derivative to each other. Let others try to *upset* the theory, which is here *set up* in some particulars on topsy-turvy combinations, or apparent inconsistencies, and I may yet *withstand* them even on vernacular grounds, though they do not *stand with* but on the contrary against me in the present hypothesis, because they may *overlook* certain points in language, which I *look over* with a mind that will not *look over* apathy or indifference, in a pursuit which alone distinguishes man from brute.' P. 3.

In the first of these extracts, to *t,hoo*, to *p,hoo*, and to *bu bu*, which are here introduced to us as English verbs, we should in vain look for in any dictionary, or, we believe, any dialect of this language; and we think Mr. Gilchrist is in this respect rather less successful in his application of Sanscrit radicals, than Mr. Bryant has been in that of his Ammonian. Why, in the second extract, the short *(ă)* should be deciphered *u*, we are at a loss to determine; and still more so, why the letters *st*, *ust*, or *ist*, necessarily denote stability. There is, perhaps, no combination of letters which would not denote it just as well:—thus, for example, suppose we were to take at random the letters *am*, how much more extensively might we deduce a proof of their universal conveyance of this idea! We have already observed that they constitute the first person of the present tense of the verb, which both in Persian and English expresses *existence*. It was by an equivalent, if not an univocal term, that Jehovah revealed himself to Moses on Mount Horeb: it comprises the most solemn and mysterious expression in the religion of the Bramins ॐ *(am*, or, as it is commonly pronounced, *aum* or *om)*; it is the radical of the Hebrew progenitor, *H-am*, the Egyptian, Greek, and Roman *Am-mon*, the supreme and most potent deity of these super-

stitious nations. In Hebrew and Chaldee (אם), when employed as a substantive, it means essential stability (a post, a pillar, or other similar support); and, as a verb, life itself; while in Latin it gives rise to the term *am*-or, the very source or principle of existence. We have already said that we have employed the *m* or *am* at random: *b*, *p*, or *l*, would have answered the same purpose in the same fanciful pursuit; and the reader who is disposed to see what may be made of these letters, may consult Mr. Bryant's Analysis, under the radicals *ab* or *ob*, *ip* or *hip*, *al* or *el*, through a variety of both oriental and occidental tongues. The origin of vocal language itself is involved in much obscurity; but to suppose that it should have been preceded by a system of literal characters, and that such literal characters should be appropriated by the common consent of the inventor, or the rude and speechless horde of his compatriots, to the expression of particular ideas or sentiments, is too absurd to be tolerated for a moment:

> ——— Nam quur hic posset cuncta notare
> Vocibus, et varios sonitus emittere linguæ,
> Tempore eodem aliei facere quoque vocibus usei
> Inter se fuerant, unde insita notities est?

We heartily wish therefore that all this fanciful theory had been omitted. We now advance to Mr. Gilchrist's practical department, which is the chief point to be attended to, and to which his hypothesis is by no means a necessary introduction. Scarcely any thing can be more simple than the form and construction of the Persian language, which, like the English, has no difference of termination to mark the gender either in substantives or adjectives. Yet the ancient and purer configuration of this language, the Pahlavi (پهلوي), such as it was spoken in the time of Xenophon, was probably more pure and simple still. Even much later than this period, the verb appears to have had few or no irregularities. Properly speaking, it has but one conjugation, and but three changes of tense; for, although it assumes other tenses, these last are only produced by the aid of the particles مي and صهي, or of the auxiliary verbs بودن or مسين. خرا ستن. The tenses of the Persian verb are uniformly regarded by Persian grammarians themselves, as formed from the infinitive; which, as the common source of all verbal inflexion, they denominate سحدر (mesder), or *the fountain*. The original infinitive constantly ended in دن or يدن (den, or yden): since the conquest of the country, however, by the Mohammedans, and the introduction into the Persian language

of the Arabic characters, together with a variety of harsh Arabic consonants before the ancient infinitive termination, دن (den) has been occasionally changed into تن (ten), or, as Mr. Gilchrist writes them, *dun* into *tun*; and a multitude of anomalies have taken place in the imperative and aorist.

It is from these anomalies that the chief difficulty arises in the study of the Persian grammar; and to obviate it as much as possible, different grammarians have arranged their verbs into different systems of classification. The Persians themselves make eleven classes. Sir William Jones has extended the number to thirteen; but his last, like the cryptogamia of Linnæus, is purposely designed to comprise all those which he could not arrange under any of the others: while Mr. Gladwin, after the example of the natives, has restored the division of eleven classes, according to the different letters which precede the sign of the infinitive.

The praxis of Mr. Gilchrist's system consists principally in the two following variations from the common division:—First, in originating the verb from the imperative instead of the infinitive; and, secondly, in separating it into two classes alone. And his motive for so novel a modification, is the attainment of a greater degree of simplicity, and, consequently, of ease in acquiring a knowledge of the Persian grammar.

In his first point we are not certain whether he be not strictly correct, and whether it might not be advantageous, according to his own idea, to apply this principle to all other grammars as well as to the Persian; for there is scarcely any language in which the verbal radical is not least incumbered with terminative additions in the imperative mood. Τιμα-ε or χρυσο-ε are simpler and shorter rudiments from which to conjugate a verb, than Τιμα-ειν or χρυσο-ειν: Am-*a* or aud-*i*, than am-*are* or aud-*ire*; so پرس (pors) *to beseech*, (one of the examples selected by Mr. Gilchrist) than پرسیدن (pors-*iden*). Yet it is highly probable, that, in the origin of primitive language, the substantive preceded every tense of the verb, and was itself the verbal radical.

With respect to the second point or principle contended for in the Prospectus before us, we cannot do better than insert our author's canons in his own words.

'CANON FOR CLASS FIRST.

'By simply rejecting the finite portion of the various Persian verbs, viz. *dun, tun, adun, eedun, stun,* and *mdun,* the imperative is generally found; but when the last letter of the part left by this process is *oo, kh, f,* these are, in the order inserted, converted to *a, z,*

(after vowels) *b*, (after consonants) *o*, as azmoo, azm*a*; amo*kh*, amoz; ya*f*, ya*b*; ru*f*, ruo; goo*f*, go; &c. After dropping *tun*, if *sh* close the remainder, it is converted to *r*; but should *eedun* be the portion dropped, the *sh* undergoes no change whatever, thus da*sh*-tun, dar; ka*sh*-tun, kar; khumo*sh*-eedun, khumo*sh*; khura*sh*-eedun, khura*sh*, &c. There is occasionally a very small change in the long and short vowels of the imperative, or a slight addition takes place, whence pookh-tun, p*u*z; moor-dun, m*ee*r; r*oo*-stun, r*o*; d-adun, *duh*; z*u*-dun, z*un*; khw*a*-stun, khw*ah*. By affixing *eedun* to every imperative now in use, the old or regular infinitive, as well as the present causals may almost always be found.' P. 20.

'CANON FOR CLASS SECOND.

'The whole of the verbs which do not come under class first, belong of course to the second here, as *irregulars* in their imperative, and its derivatives. Some verbs drop *du* from the infinitive to form the imperative, and in one instance the initial *d* of the infinitive, perhaps to prevent all confusion with *deen*, is changed to *b* in the imperative. In this last, *s* is occasionally permuted to *n* or *nd*; *kh* to *s* or *sh*, and *r* to *n*, with a slight vocal change in *kur*-dun, *koon*, as will appear in the sequel.' P. 32.

According to this division of the Persian verbs, all that can possibly be arranged under the first classification may be regarded as regulars; and all that cannot—and which, consequently, are thrown into the second—as irregulars. To us the distribution appears therefore too general; and it requires other and more minute subdivisions under each general head, to enable the learner to store them regularly in his memory. On this account we prefer an earlier classification of the same author, published some years ago in Persian and Hindustanee; which, instead of two, employed three grand divisions. Experience alone, however, must decide which of these various grammatical systems may be found most commodious: from the force of habit, we still profess ourselves partial to that of sir William Jones: it is unquestionably clear, and we did not find it operose. Once more, we decidedly object to the orthography by which Persian terms are here, as well as in former works of Mr. Gilchrist, deciphered into Roman characters: the plan pursued is, in a variety of instances, inconsistent with itself; and it is often impossible for either a student or a proficient to ascertain the vocal value of the original characters, when thus fantastically expressed. The typography employed, agreeably to the prevailing fashion, is *talic*: in an elementary work, it should have been more carefully superintended. The list of Hindustanee Synonymes will be found serviceable to those for whose benefit the prospectus is more immediately written; and affords an additional proof of Mr. Gilchrist's intimate acquaintance with this multifarious tongue.

RETROSPECT

OF

FOREIGN LITERATURE.

FRANCE.

ART. 13.—*Dictionnaire des Termes techniques de Botanique, &c.*

A Dictionary of the technical Terms of Botany, for the Use of Pupils. By M. Monton Fontenelle. 8vo. Lyons.

THIS work appears to us very useful and complete. A publication of this kind is greatly wanted in our own language, combined with a view of the general systems of botany, particularly of the natural orders.

ART. 14.—*Traité du Ménagement et de la Restauration des Bois et Forêts de la France.*

Treatise on the Management and Restoration of the Woods and Forests in France; a Work compiled from the MSS. of the late M. de Perthuis, Member of the Society of Agriculture of the Department of the Seine, by his Son, formerly an Officer of Engineers. 8vo. Paris.

This very useful work is divided into two parts. The first comprehends the nomenclature of the French forest-trees, their vegetation in different soils, their productions according to the age at which they are felled, &c.; with the revenue to be obtained from the national woods, if managed as the author proposes.

The second part contains the methods to be employed to restore the woods, by sowing, planting, preserving the trees, &c. The author has been employed all his life in plantations, and more than thirty years in the management of the forest of Villers-Colorets. His remarks, the result of extensive experience, are, of course, valuable.

It is not concealed by the French authors that their forests are almost wholly destroyed; and that the most pointed attentions are necessary to renovate them. It is not, however, in a period of war that this can be done: when will the violent spirits be at rest?

ART. 15.—*Mémoires sur les Basaltes de la Saxe.*

Memoirs on the Basalts of Saxony; accompanied by Observations on the Origin of Basalt in general, read to the Physical and Mathematical Class of the National Institute, Frimaire An. xi. By J. F. d'Abrusson. 8vo. Paris.

M. d'Abrusson, one of the most intelligent pupils of Werner, describes, in these memoirs, the basalts of Saxony, and examines

the disputed question of their origin. Following, in this respect, the doctrines of his master, he considers them as formed by a watery crystallisation, an opinion now, we believe, generally adopted. Some disciples attached to the doctrine of fire still remain; but it should be remembered that a chemist was anciently styled *philosophus per ignem.*

ART. 16.—*Dictionnaire de Chimie, contenant la Théorie et la Pratique de cette Science.*

Dictionary of Chymistry, containing the Theory and Practice of this Science; its Application to Natural History and the Arts. By C. L. Cadet, of the College of Pharmacy, &c. 4 Vols. 8vo. Paris.

The concise form of this dictionary renders it more properly a manual, and, indeed, the author seems to have intended no more. Yet he professes his design of including all the subjects of chemistry: and though so much more rich in facts than in the time of Macquer, he thinks it possible to include them within the same limits. On the whole, it appears a very useful and valuable work; and we recommend it with more pleasure, as the dictionaries of Macquer and Mr. Nicholson, from the period of their publication, must be defective. We trust, as the translation of Fourcroy's large work is concluded, that Mr. Nicholson may have time to revise his very useful dictionary, and give it to the public with all the advantages of the late discoveries.

ART. 17.—*Tableaux Nosologiques, &c.*

Nosological Tables, founded on Physiology and Therapeutics; with a Sketch of a Nosological System, founded on the same Principles. By M. Tourdes, Professor of Hygieine and internal Pathology in the Medical School at Strasburg. 8vo.

This is a pompous but very defective work. The author divides diseases according as they affect different systems, or, as he styles them, *tissus.* He hence produces four classes: first, those that affect the system of fibres, or of irritability; second, the diseases of the nervous system, or of sensibility; third, those of the cellular texture, or lymphatic system; and fourth, the mixed or complicated diseases, which affect the different systems at the same time. It is useless to enlarge on such a trifling work. The last class must be a curious medley; but the author has not yet published it.

ART. 18.—*Considérations Médicales sur les Avantages de l'Allaitement particulier, &c.*

Medical Considerations on the Advantages of hired Nurses for the greater Number of Children of great Cities, presented and defended in the School of Medicine at Paris. Paris.

It is certainly true, as the author contends, that many mothers, in the higher ranks of life, are unfit for nurses, and that hirelings are preferable. It is, however, no less true, that the mother, though less adapted to the office, will succeed better than the hired nurse who is her superior in health or strength. No general conclusion can, therefore, be drawn; and the prudent practitioner will only decide from the appearance of the child.

ART. 19.—*Mémoires sur la Respiration, par Lazare Spalanzani.*

Memoirs on Respiration. By Lazarus Spalanzani. Translated into French from an unpublished MS., by J. Senebier. 8vo. Geneva and Paris.

We now only announce the present work, as we mean to give a fuller account of it, and to add, that the name of Dulau occurs among the publishers. The volume contains numerous and interesting experiments.

ART. 20.—*Géographie Mathématique, &c.*

The Mathematical, Physical, and Political Geography of every Part of the World; compiled from the most recent and accurate Publications of Geographers, Naturalists, Travellers, and Statistic Writers of the most enlightened Nations; chiefly destined for Seminaries of Education, Professors of Geography, Merchants, and the Libraries of Men of Business. Published by Edme Mentelle, of the National Institute, and Malthe Brun, Danish Geographer, &c. 15 *Vols.* 8vo. Paris.

This work has been published in numbers, or rather, in a word beginning to be naturalised in our language, "deliveries," three volumes appearing every three weeks. The whole is now before the public; but with France our communication is difficult, irregular, and uncertain. We shall endeavour to give a short account of the author's plan, reserving a fuller examination till we shall have received the remaining volumes, if we find them meriting more particular notice.

The chief object of the authors is modern geography, or the present state of the globe and of man. They purpose, however, to add the progressive changes that have taken place in the former; and particularly to treat of the ancient classical geography.

In physical geography, they propose to follow the latest and best authors; and to connect this part of their subject with chemistry and modern philosophy. They profess also to follow Hippocrates, in treating of the difference of physical climates; and, on the subject of volcanoes, to compare Pliny with modern observers. In the physical history of the globe, it is their design to separate facts from hypotheses; yet they enlarge on the systems of Buffon, Delametherie, Dolomieu, and Deluc, which are certainly, in many parts, hypothetical. The natural history of the human race is added, which they think is a novelty not to be found even in our best systems. It occurs, however, in Mr. Pinkerton's work.

In the 'historico-statistic' introduction, they treat of the origin of laws and of empires, differences of religion and forms of government, the resources and power of different states. This, however, is very imperfectly executed. A more important part is a general table of languages, their character and their affiliation. Chronological tables of events, and of the progress of geography, are also interesting portions of the work. At the conclusion of the last volume, which we have not seen, will be a bibliographic account of maps and geographical works.

One part, which will make the work highly useful to travellers,

merchants, financiers, &c., consists of fifteen tables, containing a comparative view of the money, weights, and measures of different countries, measures of capacity, course of exchange, &c. This would have been more useful, had ancient weights and measures been retained in every instance. At present, however, it is important and full, comprising 225 pages in closely printed tables.

To connect this general view of the subject with particular descriptions, an introduction is prefixed to each chapter, giving a general philosophical and statistic view of the part of the world to which it relates. In the particular descriptions, we find an account of the divisions, extent, and population, as usual, with the natural phænomena, manners, manufactures, commerce, state of science, politics, &c. &c. of each country. At the end of each volume is a table of contents; and, at the end of the whole, an extensive general index is promised.

The atlas, with the preliminary discourse, is in folio. It has not, however, reached us. The authors promise that it shall be the most valuable and complete that has been yet seen; many of the charts having never yet been published. The central parts of Asia are placed in a new light; and, in the interior of Africa, North America, and the South Sea, are many additions to our former knowledge. The maps are forty-three in number.

ART. 21.—*Tableau du Climat et du Sol des Etats Unis d'Amérique.*

A View of the Climate and the Soil of the United States of America; followed by some Explanations respecting Florida, the French Colony of Scioto, some Canadian Colonies, and the Savages. Embellished with four Plates, viz. two Maps and a figured Section of the Fall of Niagara. By C. F. Volney. 8vo. *2 Vols.* Paris.

We shall, at present, only announce this work. The celebrity (a celebrity, however, clouded by many dark spots) of the author will, on another occasion, demand a fuller examination. 'It is the result,' M. Volney observes, 'of three years' travels in the United States of America, *viz.* in 1795, 1796, and 1797, in circumstances and a situation of mind very different from those of my travels in Turkey.' We find, however, the same characteristics. M. Volney's information is indeed polluted by a revolutionary and a party spirit; but his syle is still elegant and pleasing; his representations interesting.

ART. 22.—*Voyage à Petersbourg, &c.*

A Journey to Petersburg; or New Memoirs respecting Russia. By M. de la Masseliere. Preceded by an Historical View of that Empire to 1802. *By V. D. Musset Pathay.* 8vo. Paris.

This publication is chiefly designed for France; and it is interesting in that country, since it contains an account of Russia at the period when all connexion between it and France was destroyed.

M. de la Masseliere seems to write for his amusement. Without any regular plan he follows the impulse of the moment, recalls past events, and seems to derive his greatest pleasure from thus fixing them in his memory. His style is, consequently, lively and negli-

gent; but it is not without its charms, and stamps on the substance the seal of authenticity.

The historical view of Russia is not uninteresting. Inquiries into its external and internal commerce; its relations; interests; manners; customs; the taste of the inhabitants; their character; some philosophical views on the state of the people, their religion and government; observations 'on what is and what may be,' are collected in a small compass—light and imperfect indeed, but attractive, and apparently authentic.

ART. 23.—*Bibliothéque Italienne.*

The Italian Library; or A View of the Progress of Science and the Arts in Italy. By MM. Julio, Grobert, Vassalli Eandi, and Rossi, Professors of Chemistry, Physiology, and Surgery, in the Schools of Turin. Numbers I. II. III. 8vo. Turin.

The language and the political connexion induce us to place this journal among French productions. Its object is to introduce the productions of Italian philosophers into France, where they have been in general little known, and to publish in Italy the productions of other nations. A number, containing six sheets, is published twice in every month.

GERMANY.

ART. 24.—*Tabula Affinitatum Regni Vegetabilis, quam delineavit et nunc ulterius adumbratam tradidit C. S. Batch.* 2 *Vols.* 8vo. Weimar.

Table of Affinities in the Vegetable Kingdom, sketched and presented by C. S. Batch.

We disapprove of the language of one science being thus rashly transferred to another; and, in every view, chemistry claims the term affinity as her own. This table, however, shows the *connexion* of different families of plants, accompanied with accurate and complete descriptions,—the climates they inhabit, and the species comprehended under each. Ninety-three families are distinguished, divided into forty-two orders and eight classes, chiefly from the structure of the flower. The classes are accurately defined and discriminated, but do not differ from those already established in natural systems. Their titles are rosaceæ, cruciatæ, ringentes, liliaceæ, incompletæ, monopetalæ, compositæ, and cryptogamia. As an example of the subdivision, we shall add that of the 'incompletæ.' The orders are culmales, agrostales, spadicales, juliferæ, cocciferæ, seminiferæ, and nuciferæ.

ART. 25.—*Observationum Botanicarum Fasciculus primus. Scripsit A. R.* 4to. Lipsiæ.

These are the observations of a successor, perhaps the son, of the Hedwig, whose labours, in elucidating the structure and physiology of mosses, we have so often followed in this journal. He describes fourteen plants, of which twelve are mushrooms. He disapproves of the classification of Persoon and Schraeder, as the characters are not accurate, and professes to follow his name-sake.

The descriptions are short, because the author was unwilling to

follow the synonymous language of other botanists. The first plant that occurs is the tetraphis rigida, discovered by Funk, and described in the portfolio of Happe, with the trivial name of ovata; the tremella nivea, orbicularis, alba, &c.; agaricus niveus; A. sagittula; A. violaceus solitarius, carnosus, &c.; perfectly resembling the A. cyanchus of Persoon; polinaria fusca; sphæria lycoperdoides Weig.; S. pulvinata of Hoffman; octospora tremelloides, probably the O. elastica of Hedwig; O. nivea, exigua, alba, &c.; O. paradoxa lateritia, &c.; lycoperdon ferrugineum; L. luridium, the trichia nitens and rubiformis of Persoon, the first of which has been already described by Haller; lycoperdon entomoides, gregarium album, &c. This species has not been properly distinguished, but seems to be a trichia, like the former. The work is illustrated by eleven coloured plates, which are well executed.

ART. 26.—*Pomologisches Handbuch.*

The Pomologic Manual, extracted from the Pomologic Gardener of M. Sikler, by Ph. Wrede. 8vo. Hanover.

Let no one attempt, at least no German, to write a duodecimo, since the great work of M. Sikler already extends to twenty volumes. M. Wrede has been well employed; for the prototype was beyond the reach of gardeners in general. As we have not seen M. Sikler's twenty volumes, we cannot judge of the comparative merit of this abstract: yet it is singular that the greater number of the tables should have been omitted; for M. Wrede informs us that they are now first added. The first table, which is the only one copied, is indeed contained in M. Sikler's work, and points out the species, and the times of their ripening, referring always to the larger system; the second contains the French nomenclature; the third, the trivial names in French, English, and Dutch; and the fourth, the same names in the German language. We may expect a continuation of this abstract, since we find it extends only to the twelfth volume of the Pomologic Gardener.

ART. 27.—*Gemeineziger unterricht über die Gifte.*

Popular Instructions on Poisons, for general Use. By Scholze. 8vo. Breslaw.

Scholze is the author of a work on the poisonous plants of Germany, which is illustrated by exact descriptions and good plates. It has been received with great attention on the Continent. The present volume diverges to some subjects not strictly according with the title—*viz.* fiery meteors and the tremella nostoch; produced, as he thinks, by poisonous, inflammable vapours in the air. He then adverts to the immoderate use of brandy, wine, and coffee; whose effects, in his opinion, resemble those of poisons. These observations are followed by a more particular account of hemlock, and other poisonous plants: the whole is detailed by questions and answers. The following is the author's definition of a poison:—'A substance, incapable of being digested or assimilated to the animal body, which produces a degeneration of the animal fluids, and death more or less sudden, if the consequences be not prevented.'

ART. 28.—*Archiv für die Thierische Chemie, &c.*

Archives of Animal Chemistry. Published by Dr. J. Horkel. Numbers I. and II. Halle.

We introduce, as usual, the new journals. Animal chemistry is now fashionable; and, in the country of journals, this subject requires a distinct *dépôt*. Crell's and Scherer's journals extend to the whole science, and include both pharmacy and mineralogy. The present work will be exclusively appropriated to animal chemistry.

We have looked over the first two numbers, and find many of the articles taken from English authors, and of no late date. The French chemists have also contributed to fill the pages. The first article is from Fourcroy, on the further Progress to be made in Animal Chemistry; 2. on the Urine, chiefly in a State of Disease, by Mr. Cruickshank; 3. Extract of a Memoir, by MM. Bunive and Vauquelin, on the Fluid of the Amnios; 4. on the Benzoic Acid in the Urine of Animals, by Paysse; 5. Experiments and Observations on Shells and Bones, by Hatchet; 6. Extract of the first Memoir, by MM. Fourcroy and Vauquelin, on the Urine, relative to its Analysis and Putrefaction; 7. Memoir on the Uree, by the same; 8. Experiments on the Urine, by Proust; 9. Memoir on the Urine, by Fourcroy and Vauquelin; 10. Experiments on the Hydropic Fluid, by Fourcroy; 11. Experiments to show how the Chyme is changed into Chyle. Besides these memoirs, we find an abstract of Dr. Rollo's work, and of some Experiments on the Cerumen of the Ears, by Marquart Deyeux, &c.

ART. 29.—*Archiv für die Pharmacie und Aerztliche Naturkunde, &c.*

Archives of Pharmacy and Medical Philosophy. Published by J. Schaub and J. Piepenbring. Vol. 1. *Numbers I. II. and III.* 8vo. Cassel.

Another new journal! The first article is a Discourse, pronounced by Schaub in the Assembly of the Corresponding Society of Pharmacy, in the district of Cassel. This is followed by a Discourse from his coadjutor, on the question—'Whether the Milk of Sulphur should be continued in the List of Remedies, and what are the best Methods of preparing it?' 3. The Antimonial Wine of Huxham, considered as a very active but uncertain Remedy, and superseded by a more useful Preparation—(two grains of Emetic Tartar in an Ounce of Wine,)—by Schaub; 4. The Privileges of Pharmaceutic Establishments, their Advantages and increasing Numbers, by Schmidt; 5. Miscellaneous Information.

The subjects of the second and third numbers are, 'Reflections on the Effects of Saturnine Remedies applied externally, by Hunold;' on Soap of Mercury, by Piepenbring; an Examination of the Methods of Piepenbring and Krüger, in preparing the concentrated Acetic Acid; on the Male Fern, by Krüger; Fragments on Galvanism; a Memoir to assist our Knowledge of the true Gum Guaiacum, by Schaub; on the Effect of the Rhus Radicans, employed externally, by Krüger; a chemical Decomposition of the Rhus Radicans, by Van Mons; on the Preparation of Sulphur of Antimony, proposed by Tromsdorf; on the Use of the Metallic

Electricity of Galvani and Volta in Deafness, by Sprenger; Memoirs to assist the first History of Galvanism, by Schaub; with Extracts of Letters.

ART. 30.—*Grundriss der Entbindungskunst, &c.*

Principles of the Art of Midwifery. By F. B. Osiander. 2 Vols. 8vo. Göttingen.

We introduce this work only to add our reprobation of the author's practice, already condemned by the best practitioners, *viz.* the frequent and unnecessary use of instruments. M. Osiander continues to employ and to recommend them.

ART. 31.—*Der Schlaf und das Schlafzimmer.*

Sleep and Bed-rooms considered with respect to Health. 8vo. Goedike.

This little work contains some good rules, relative to the subjects in the title; but, as usual with authors on the management of health, this writer is not a little whimsical. He treats of sleep, of the best times for sleeping, the composition of the bed, the night-dress, and the bed-chamber. He reprobates the use of feather beds, and the custom of sleeping after meals. Feather beds render people, in his opinion, liable to inflammations of the breast, and sleeping after meals, to apoplexy. Each subject, however, should be considered more fully than in the present volume, and in relation to the persons, the constitutions, the habit, the food, &c.

ART. 32.—*Allgemeine Encyclopædie der Handlungs Wissenschaft.*

A general Encyclopædia of Commerce, and the Knowledge connected with it. Published by A. Schuman. Section I. Part I. Containing Information respecting the Merchandise of Hair and Feathers. 8vo. Konneburg.

This is the first part of a very voluminous work, in which the editor has himself engaged to treat of the mercantile productions from animal substances, while those from the vegetable and mineral kingdoms will be intrusted to two philosophers of distinguished celebrity. Many works of this kind already exist in the German language, of unequal merit, particularly those of Bohn, Schedel, &c.; but the plan of the present Encyclopædia includes not only a knowledge of merchandise, but many circumstances hitherto unknown, and professes to correct many commercial errors. The work will be very voluminous; for the mercantile productions taken from the animal kingdom will fill three volumes. The contents of the first section we have mentioned in the title. The second and third will treat of the merchandise of wool and silk; the fourth and fifth, of peltry skins and leather; the sixth, those of horn and bone; the seventh and eighth, of fat and animal drugs. The ninth will contain the commerce in fishes; the tenth, that in cattle and men. The style is clear, and often animated. It is printed in Roman letters, and the impression is equally neat and correct.

ART. 33.—*Entdekle Geheimnisse und Vortheile für Fabriken Manufacturen, &c.*

Secrets and Processes published for the Use of Manufacturers, and the Purposes of Economy. 8vo. Frankfort.

The secret processes explained in this volume relate to the bleaching of linen and cotton; the art of printing cottons and linens; of fulling woollen cloths, and preparing silk stuffs. We find also processes for preparing Prussian blue, Morveau's Spanish white, cobalt blue, instructions for managing the beans of Libidibi, madder, and various other vegetable dyes. In short, a great variety of useful processes are here collected from works either little known, or not within the reach of manufacturers in general.

ART. 34. *Unumstoesslicher Bewis dass die Erd drei-und Mehral Aelter ist als Man Gewoehnlich annimmt.*

Evident Proofs that the Earth is three Times more ancient than it is usually supposed. Accompanied with a Description and Figures of the two ancient Zodiacs discovered by the French in the Temple of Isis, at Tentyra in Upper Egypt. 8vo. Leipsic.

Infidelity seised on these zodiacs; and, with the same spirit which caught at successive strata of lava, and at Chinese and Indian chronologies, endeavoured to prove the Mosaic narrative fabulous, or at least the æra deduced from it. Fools!—are they not, can they not be made sensible, that the ways of Omnipotence are impressed with stronger marks even than these?—that even their own weapons are more fatal to their cause, than those of their antagonists? We are confident in saying, that, 'while all Nature cries aloud' there is a God—all her works, impartially examined, prove that God is all-powerful, all-wise; nor has any fact of the slightest importance hitherto impugned the revelations vouchsafed to man.

ART. 35.—*Ueber die alten Thierkreise in Egypten.*

On the ancient Zodiacs found in Egypt. By F. Gussman. 8vo. Vienna.

Our author combats with zeal and success the ideas drawn from the late discoveries in Egypt, when employed in opposition to revealed religion. After a short explanation of the zodiac, the equinoxes, and the solstices, the author contends, that the hands found in the constellation of the Lion, in the zodiac of Tentyra, are not the symbol of the summer solstice, but a hieroglyphic, indicating the inundation of Egypt, by the swell of the Nile, at the period when the sun was in the sign Leo. This idea is supported by a passage in Horapollo, and many monuments in which the Lion appears. The author then endeavours to show, that this zodiac cannot be 3000 years old, and that it may be less than 1700 years, since, in all the Egyptian antiquities, no summer solstice appears, but in the sign Cancer. The zodiac of Esne can only show the height of the inundation in the sign Virgo. The assertion of Dupin, that the Egyptian zodiac was invented 15,200 years before the Christian era, is wholly destitute of proof. We are acquainted with the cycle of the Dog-star, of 1461 years, among

the Egyptians, the invention of which we know to have been after the 135th year A.C. The author then combats the antiquity of the Egyptians from the narrative of Moses; from which it appears, that 3,500 years before our æra, Egypt was still in a state of ignorance, so that we cannot assign it 4000 years of scientific cultivation. In another view, the æra of Menes, the oldest recorded king of Egypt, is not more than 2,500 years before the Christian æra.

From other causes, the author has no hesitation in distrusting the very extended chronology of the Indians, and shows from philosophic and chronologic arguments, that such remote antiquity is impossible. This work, we perceive, has been translated into Italian, and published at Venice.

ART. 36.—*Betrachlungen über die Natur für Verstand und Herz. Considerations of Nature for the Mind and the Heart. By B. S. Walther. 4 Vols. 8vo. Plates.* Weimar.

This work is a physico-theological one, whose object is to conduct man towards the Author of nature, by a contemplation of his works. The first volume relates to the stars, and their influence on the earth, divided into two sections; of which the first contains the theory of the universe, and its application to religion. In the last part we find some unavoidable repetitions, though in general the style is easy and correct.

The second volume treats of the physical organization of the earth, and its physical changes. The third is confined to man and animals. Plants and minerals are the subject of the fourth, terminated by a general table of contents. To explain the plan of the whole, we shall give a short abstract of the fourth volume. The first section is confined to plants; in which, after some general considerations on the vegetable kingdom, the author treats of trees, shrubs, herbs, grasses, and plants, with imperceptible flowers. He points out the power and wisdom of the Creator in the arrangement of the vegetable kingdom, and the influence these considerations should have on our opinions and our conduct. The author follows the same train, in his view of the mineral kingdom, and treats of earths, stones, salts, earthy resins, or inflammable minerals, and metals, with the application of this knowledge to religion.

The plates represent, 1. the eruption of Vesuvius in 1794; 2. the cavern of stalactites near Slains, in Scotland; 3. the cavern of Fingal in Staffa; 4. the position of the earth with respect to the sun, in the four seasons; 5. water-spouts; 6. the five principal races of man; 7. the various bread-fruits; 8. various animals and plants.

ART. 37.—*Betrachlungen über die Natur.*

Contemplations on Nature, not *imitated from Bonnet and Sanders. 8vo.* Leipsic.

This work is a kind of *anti-theodicea,* founded in part on the principles of Hume, and in part on the author's own observations. The preponderance of evil over good in this world is explained and demonstrated by the destructive force of the elements; by the changes in the state of the earth, by the number of animals of

prey, and by the moral corruption of the nature of man. The author does not accuse Providence of the physical evils of the world, which he considers only as the result of general laws; but he freely owns, that he cannot reconcile the existence of evil in the world with the idea of a being infinitely good and just. In fact, the author means well, but possesses neither acuteness nor comprehensive views. The work is written with clearness and energy, seemingly from the heart.

ART. 38.—*Triumph der Philosophie im achtzehnten Jahrhundert.*

The Triumph of Philosophy in the Eighteenth Century. 2 *Vols.* 8*vo.* Germantown.

The two volumes before us contain the history of the modern philosophy, or, as some authors chuse to style it by way of distinction—philosophism. We find the usual steps from Voltaire and Rousseau, to the Illuminés and Free-masons, which we have formerly spoken of, and respecting which our opinions are *not* changed. The author, like some of his hasty predecessors, has caught at resemblances, and supposed them coincidences or consequences; and in some respects has misrepresented facts.

It is certain, that early in the 18th century the philosophy of the ancient schools was abolished: and this was in a great measure owing to the suppression of the Jesuits. The authors of this dangerous revolution were Leibnitz and Thomasius. The system of the former has been said to lead to Deism and Spinozism; yet Wolf has refuted the system of Spinoza from the works of Leibnitz.

Frederic and his band of deists are said to have hastened the progress of this revolution; yet Maupertuis was a zealous catholic. The greatest error of this king, it is said, was the establishment of a general toleration in his dominions. In fact, however, the toleration was established one hundred years before his time, and he only continued it.

The universal German Bibliotheca, which was supposed to have preached philosophism under the auspices of Frederic, commenced only in 1765, twenty-five years after his coming to the throne; and Lessing, we believe, who is here accused of co-operating in the great work of reformation, had no share in the Bibliotheca.

Philosophy perhaps, as the author alleges, has contributed to overturn thrones and altars; undermined equally morality and religion; yet we cannot agree with him in the propriety of the remedy, the re-establishment of the order of the Jesuits. This is the burden of the song, and he concludes with these words:

Et nunc, reges, intelligite.

ART. 39.—*Immanuel Kant über Padagogik.*

On Education. By Emanuel Kant. Published by Dr. F. T. Rink. 8*vo.* Königsberg.

Dr. Rink, in this work, publishes a recapitulation of the lectures of Kant on education. This is not a system, but a series of observations and experiments, marked with the genius and the peculiarities of the author. Education is divided into physical cultiva-

tion, discipline, and instruction. The first prevents the abuses which man may make of his power. Discipline renders him a social being, and obedient to the laws; and instruction furnishes him with the positive means of unfolding his natural faculties. The object of education, according to our author, is to direct the freedom of manner, which man himself feels and acknowledges to be the necessary rule of his well-being. Education therefore should be treated as every other science, and only employed in the successive developement of the natural faculties, to direct them insensibly to the love of order, a knowledge of the world, and morality. According to Kant, 'an instructor has done every thing for his pupil, if he have proved to his conviction the *equality of mankind*, if he have rendered him contented with himself, and habituated him to a severe examination of himself at the conclusion of every day.'

ART. 40.—*Geographisch-Statistische Beschreibung der Fürstenthumer Wolfenbuttel und Blackenburg.*

A Geographic and Statistic Description of the Principalities of Wolfenbuttel and Blackenburg. By G. Hassel and K. Bege. 8vo. Brunswick.

Though these principalities be of little importance to the English reader, yet, as the accounts seem to be drawn up with care from authentic documents, we thought that a few of the facts would not be uninteresting. The number of inhabitants of Wolfenbuttel, including Hartz, amounted in 1793 to near 200,000. The corrupted German jargon, once generally spoken, was banished from the tribunals in the sixteenth century, from the churches in the seventeenth, and from the cities in the eighteenth: it is still however preserved in the country.

The principality is rich in grain, particularly in flax, which occasions a considerable and valuable manufacture of linen. The mountains furnish a large quantity of wood, and contain some valuable mines, which are worked with profit and success. On these subjects the author's accounts are full and valuable. This is however only a first volume of a work, subservient to the statistics and general topography of Germany.

ART. 41.—*Geographie und Statistik der Saemtlichen Staaten, &c.*

Geography and Statistics of all the States of the King of Sardinia, according to their Extent, previous to the War of the Revolution, viz. Savoy, Piedmont, Montserrat, a Part of the Milanese, and the Island of Sardinia, to elucidate the Chart of these States published by the Abbé Denina. 8vo. Berlin.

We survey with a melancholy interest the remains of past grandeur, the effects of that desolation which a revolution, unexampled in its extent, conduct, and effects, has occasioned. The present work is designed, as the title tells us, to illustrate a chart. It is, in reality, a separate publication of Denina's Introduction to the History of the Sardinian States; in which the imperfections of former historians are supplied, and their errors corrected, from unpublished or imperfectly known documents, as well as his own observations.

The work is divided into twelve sections, of which ten are geographic. The descriptions of the provinces contain many interesting accounts, and corrections of some ancient and established geographic systems. In the eleventh section the author gives a description of the island of Sardinia; in the twelfth a complete statistic account of the former states of Sardinia. From the Calendario Economico of 1800, the Sardinian states of the continent contained 3,190,184 individuals. It is even said, that, from 1774 to 1790, the increase in numbers amounted to 230,000.

The chart added to the work was laid down by Denina, and engraved by Sproegel. It contains the dominions of the king of Sardinia, according to their ancient limits, previous to the revolution.

ART. 42.—*Reise eines ungenannten durch Deutchland und die Schweitz, &c.*

Travels of a Person unknown through Germany and Switzerland, in the Years 1799, 1800, *and* 1801. 8*vo.* Breslaw.

The author of these travels has collected, in every part of his tour, interesting information, and his observations generally bear the stamp of genius. He proceeds from Nuremberg to Augsburg, Ulm, Bregenz, and the Grisons, where he remains for a short time, to proceed to Bormio, whence he intended to pass on to Italy. He was however hindered by circumstances, and he regained St. Gothard by paths untrodden and dangerous. He afterwards passes through the canton of Uri, to go to Zurich, where he describes several scenes on the lake. From Zurich he returns by Schaffhausen, where his travels in Switzerland terminate.

The travels in Germany contain some good observations on the cities of Stutgard, Carlsruhe, Manheim, Frankfort, Wurtzburg, Bamberg, Erlang, and Nuremberg. In considering that these travels extend 400 French leagues, it will be obvious, that the author cannot have spoken much of himself, or filled his pages with anecdotes. His work is confined to descriptions, or to interesting observations, accompanied with six but indifferent plates, representing views of Nuremberg, of Altdorf in the canton of Uri, Zurich, Constance, Heidelberg, and Manheim.

ART. 43.—*Wanderungen durch einen grosen Theil des Harzes, &c.*

A Journey through a great Part of the Forest of Hartz, and through the Counties of Hohenstein and Mansfeldt. 8*vo.* Magdeburg.

The style of this work is pleasing; and so far as it contains a minute description of the views and situation of the Hartz, which fill the larger part, it is entertaining and interesting. The statistic information is treated slightly in the notes; and what relates to the mines is short and unsatisfactory, to those who wish for instruction; and too concise for those acquainted with them.

ART. 44.—*Mansos Vermischte Schrifften.*

The Miscellaneous Works of Manso. Tom. 1 *&* 2. 8*vo.* Leipsic.

Manso is chiefly known as a poet, and an imitator of Pe-

trarch. In the volumes before us, however, we find also some philological treatises, elegant, if not profound. Among these, are 'Letters on ancient Alexandria,' continued in the second volume; and eleven sheets on the 'Tradition of the Old World.'—The third volume is in the press.

ART. 45.—*Juliani Imperatoris in Constantii Laudem Oratio, Græce et Latine, cum Animadversionibus Dan. Wyttenbachii: accedit ejusdem Epistola critica ad Dav. Ruhnkenium. Græca recensuit, Notationem criticam Indicesque adjecit, G. H. Schæfer.* 8vo. Leipsic.

The Julianæa of Wyttenbach demand a distinguished place among the classical works. As these works are become scarce, we announce, with pleasure, the present edition. The epistle to Ruhnkenius, the first publication of Wyttenbach, adds to its value.

ART. 46.—*J. H. M. Ernesti Clavis Horatiana, sive Indices Rerum et Verborum philologico-critici in Opera Horatii, præmissis ad Lectionem Usumque Poetæ necessariis. Vol.* 1. 8vo. Berlin.

It is sufficient to announce a work designed to explain each word and phrase of Horace. The author's character requires not our support; and those acquainted with the labours of Ernesti will be sensible of the merits of this volume. The glossary at least seems complete; and it will be difficult, if not impossible, to fix on a word not to be found in the 'Key.'

After the preface, we find the Life of Horace by C. Suetonius Tranquillus, with the notes of Mitscherlich, emendations and additions.

2. The history of Rome, during the age of Horace, by Wetzelius.

3. Ancient testimonies in favour of Horace. An index of names, a syntactic index, and an index of words, conclude the work.

ART. 47.—*Saadis des Weisen Persers Koenigsspiegel.*

The Mirror of Kings, by Saadi, a Persian Sage. By J. G. Grohman. 8vo. Leipsic.

We are acquainted with only three works of Saadi, viz. the Gulistan or the Garden of Roses, the Bostan or the Garden of Fruits, and the Melemoat or the Rays of Light. The first is written in prose intermixed with verse: the two others are in verse. We have, in our language, many parts of the Gulistan in the Asiatic Miscellanies, and Gentius has published a translation in Latin with the Persian text on the opposite page. It first appeared at Amsterdam, in folio, under the title of Rosarium politicum, in 1651, and in 1689 a small edition in 12mo was published, adorned with plates.

We strongly suspect that Gentius and the Asiatic Miscellanies are the sources of the present translation: for the expression of 'Mirror of Kings' occurs in Gentius's preface, and a part of the forty-eight pieces here published occur also in Gentius; the remainder in the English work.

ART. 48.—*Denwürdigkeiten zur Geschichte von Schwaber.*

Memoirs subservient to the History of Suabia, during the two Campaigns of 1799 *and* 1800, *published by J. G. Pahl.* 8vo. Nordlingen.

These memoirs are the more valuable, as they are drawn from unpublished papers, many MS. notes, and more positive documents, collected by the editor on the spot, or from his correspondence. The whole is divided into nine sections: The 1st and 2d contain the history of Suabia, from the peace of Ekenwald to the renewal of hostilities; the 3d, The campaigns of general Jourdan in Suabia; 4. The conduct of the army of the Danube, and the state of Suabia during its passage; 5. Remarkable events during this period, till the renewal of hostilities; 6. Events of the winter 1799 and 1800; 7. Events from the opening of the campaign to the treaty of Parsdorf; 8. The situation of Suabia during this æra; and 9. The events which occurred previous to the general peace.

ART. 49.—*D. Martin Luthers Reisen und Merkwurdige Schikssale.*

Travels and remarkable Events in the Life of Dr. Martin Luther, with an Abstract of the History of the Reformation, to the Peace of Westphalia. By J. F. Kutscher. 8vo. Schleswick.

The travels of Luther are of so little importance, if we except his journey to Rome, that the author seems to have adopted the title, to distinguish his work from the innumerable lives of this celebrated reformer already published. If this volume add to the list, it does not add to our knowledge. It is properly a history of the life and the reformation of Luther, made up from common materials, mixed with insignificant events and bold assertions.

In the first book, the author treats of the life of Luther, from 1483 to 1517. To the narrative of his journey to Rome, he adds an explanation of the Ambrosian and Gregorian liturgy, which is wonderfully misplaced in this volume. The second book contains the events of the years from 1518 to 1522. We were surprised at his stopping at this point, since, three years afterwards, the reformation was introduced into Saxony, by the consent of the elector. The third and fourth books proceed to the year 1537; and we here find numerous errors respecting the conduct of Zwingle, and our own Henry. In short, we need not dwell any longer on this article; our object is to give an account of German literature in different departments, and of works of different merits.

ART. 50.—*Leben des Desiderius Erasmus.*

The Life of Erasmus. Leipsic.

This is a separate publication of a life, which has already appeared in the seventh volume of a collection, entitled, 'The Biography of celebrated Reformers.' We might expect to find in it whatever Erasmus has done, to clear theology of its abuses, by the application of ancient literature, criticism, the study of history and philosophy, &c.; with what zeal he combated prejudice and super-

stition, to prepare the mind for a necessary and useful reformation. Of all this, however, we discover not the slightest trace. Our author's chief object is to show, that Erasmus does not deserve the character of a great man; that he neither equals Luther, nor even Ulric of Hütten. The work is intended to be a popular one; and yet the author stops to relate the discussions between Erasmus, Stunica, Bedda, Carpi, Lee, and others. In return, he passes in silence the pleasing and satirical pictures of the manners, opinions, abuses, follies, and superstitions of his age, which render his dialogues equally amusing and instructive.

ART. 51.—*Meine Pilgerschafft durchs Weltgehimmel.*

My Pilgrimage through the Tumult of the World. A romantic Tale. Vol. I. 8vo.

This tale is said to contain the true history of an itinerant comedian, in the western districts of Germany. Those who have laughed at the Comic Romance of Scarron, and the numerous similar works in our own language, will perhaps be pleased with comparing the French and English with a German portrait. The German comedian has not, indeed, the spirit and humour of his predecessors; but his imagination is lively, and his sensibility renders the work interesting. Many inferior German publications have been translated.

ITALY.

ART. 52.—*Dissertatione dell' Abate Domenico Testa, sopra due Zodiaci, &c.*

Dissertation of the Abate Domenico Testa on the two Zodiacs lately discovered in Egypt. Read at an extraordinary Meeting of the Academy of the Catholic Religion, July 5th, 1802. 8vo. Rome.

In our review of the literature of Germany, will be found an account of two works on this subject; and our attention will be, probably, again called to it by some English publications. We shall, therefore, only now recapitulate the very judicious and satisfactory arguments of this author, without being able, in this place, to appreciate the force of each.

The use of the zodiac in Egypt cannot be traced higher than the period when the vernal equinox entered Aries, an epoch of 3600 years. One of these zodiacs cannot, therefore, reach above 720, and the other 2880 years beyond this period. The ancient Egyptians, in other respects, were not so far advanced in the knowledge of astronomy as the Chaldæans and other nations.

2. These zodiacs must have been constructed about the time of Hipparchus, or rather later, nearly about 150 years before the Christian æra.

3. Paul Lucas, who speaks of the temple of Tentyra, found in it Greek inscriptions; in one of which the name of Marcus Clodius, and in another that of Tiberius Cæsar, were observable. Pococke also assures us, that the ornaments of the temple are the works of the most able Grecian sculptors. The temple must, then, have been built at an æra when the Egyptian architecture was already united with the Grecian.

4. The zodiac of Tentyra contains the constellation of the Balance, which was only discovered by the astronomers of the school of Alexandria.

5. The indication of the solstice by the Hands, in the sign Leo, proves nothing, because the ancient Egyptians did not begin their civil year by the summer solstice, but by the heliacal rising of Sirius, which coincided with the entrance of the sun into the sign Leo, and with the inundations of the Nile.

6. The zodiac of Esne, which is but imperfectly known, seems, according to appearances, to be of the æra of Augustus, because then the new æra of the Egyptians commenced (the æra Actiaca); because in the month of September the sun entered Libra; and in the same month the battle of Actium, which gave Augustus the possession of the whole of Egypt, was fought. The Athyr of the Egyptians was confounded with Venus Genetrix.

The work concludes with two memoirs: the first on the antiquity of the Egyptian temples; the second on the antiquity of the constellation of Libra, on a comparison with Indian monuments, from which an attempt has been made to prove its greater antiquity.

ART. 53.—*Dizionario Storico degli Autori Ebrei e delle loro Opere.*

Historical Dictionary of Hebrew Authors, and their Works. By Dr. G. B. de Rossi. 2 Vols. 8vo. Parma.

M. de Rossi is, perhaps, the only person among modern *literati* who could engage in such a work, as his knowledge of Hebrew literature is uncommon and extensive, and as he possesses a valuable collection of Hebrew books and MSS. This has enabled him to complete and amend Wolf's Bibliotheca Hebraïca, and other works of the same kind. We shall mention some of the articles which respect men not generally known.

In Italy we may point out Jacob Saravel of Venice, and Israel Benjamin Brassani, a rabbin of Reggio. The first was also a rabbin, and died at Mantua in 1782. He was well versed in Christian philology, and was said to disapprove many points in the Jewish ritual. The latter died in 1790; was one of the best poets of his nation, and highly esteemed for the rectitude of his character.

Among the German Jews we find some accounts of Bloch the ichthyologist, Moses Mendelshon, and Hartwig Wesseleys. Marcus Herz, a very respectable physician of Berlin, is only shortly mentioned: others are passed in silence, as Abraham Euchel, David Friedlander, Aaron Wolfshon, &c.

A Hebrew journal, under the title of the Collector, which contains interesting literary intelligence, seems not to have reached M. de Rossi; but this omission is compensated by his quotation of other Hebrew works little known in Europe; and of authors who have treated of Hebrew literature, as Philo Alexandrinus, Flavius Josephus, Aquila, Theodotion, &c. Among the most interesting articles we notice those of Elias Levita, born in 1472; Moses Maimonides, born in 1139: Saadia Gaon and Tancum, quoted by Pococke and Schnurrer.

The Hebrew text is printed in Roman characters, according to the Italian pronunciation; a plan we cannot commend, as it will

be the source of numerous mistakes. The author often quotes 'Catalogo ragionalo de miei MSS.'—A descriptive Catalogue of my Manuscripts. The first volume of this catalogue is in the press, and will appear with the following title: 'MSS. Codices Hebraïci Facultatum omnium, Bibliothecæ Auctoris accurate descripti perpetuisque Scholiis historico-criticis ac Commentario illustrati.'

ART. 54.—*Opere del Dottore Ludovico Scapinelli, soprannominato il Cieco.*

The Works of Dr. Lewis Scapinelli, called the Blind. Vol. I. 8vo. Parma.

Dr. Scapinelli was born blind, but acquired extensive knowledge notwithstanding his misfortune, and distinguished himself in philosophy, eloquence, and poetry, so as not only to excel his contemporaries, but even to anticipate the improvements of future centuries. The proofs of these assertions may be found in the Life of the author, by Pompilio Pozzetti, prefixed to the present volume, from which we copy the following passage:

'Filologo, oratore, poeta, coltivator delle muse Italiane e delle Latine, sostenne fino al 1634, con non commune onore, le primarie catedre delle varie università d'Italia, lasciando quantità d'opere d'ogni genere.'

This first volume contains the Latin and Italian poetry, and some pieces in prose in both languages. The Italian poems, though few, are light, and have an originality both in the ideas and expressions. The sonnets have a little of the false brilliancy and affectation of the age. On the contrary, in the Latin poems there is equal justness of thought and elegance of expression. He seems deeply impressed with the beauties of the ancient classics; and Ovid, Virgil in his eclogues, and Tibullus, appear to have been his most approved models.

HOLLAND.

ART. 55.—*Geneeskundig Magazijn, &c.*

Magazine of Medicine. By Van Stripian Luiscius, C. G. Ontyd, M. J. Macquelin, and J. Van Heekeren. Vol. I. No. 1—3. 8vo. Delf.

This magazine is designed as a *dépôt* for the observations of the Dutch physicians, and at the same time to supercede the Verhandelingen, published by the Society of Natural Philosophy and Medicine at the Hague.

Besides the names mentioned in the title, we perceive those of Vanden Bosch, Van Geuns, and Runk, whom we have already had occasion to notice with commendation..

We perceive few subjects that can detain us. The vaccine disease is noticed, in many parts, with respect and confidence. A singular memoir occurs on the natural history of human excrements; and we find two instances of the good effects of the radix Lopeziana, first recommended by Gaubius, in his Adversaria, in cases of dysentery.

ART. 56.—*Verhandelingen van het Genootschap ter bevordering der Heelkunde te Amsterdam. Vol. VII.* 8vo. Amsterdam.

We have formerly noticed some of the earlier volumes of this collection, which seems to lessen both in bulk and interest. We first find an account of the prize memoirs; and next follow the different communications. The first is entitled Observations on the Wounds of the Lower Belly, by J. C. Albrecht and J. Hankman, each of whom obtained a silver medal. Some other memoirs of importance follow, of which we noticed, with particular approbation, four cases of bloody lymph accumulated in cancerous breasts, by A. C. Monro; with four analogous observations, by E. P. Swagerman. Observations on a recent Luxation of the Right Thigh, reduced by J. Martens, and explained on anatomical Principles. A Memoir on Deformed Pelves, with a new Method of Delivery, to preserve both the Mother and Child.

ART. 57.—*Reizen nae de Kaap de Goede Hoop, Jerland, end Norwegen, &c.*

A Voyage to the Cape of Good Hope, Ireland, and Norway, in the Years 1791—1797. *By Cornelius de Jong, Captain of the Frigate Scipio. Vol. II.* 8vo. Harlem.

We some time since noticed the first volume of this work. The voyage commenced in 1794, and captain de Jong arrived at St. Jago in the best season, but found the island sickly; which seems to show that it is unhealthy in consequence of the rains, which fall at the end of summer. In other respects it is very fertile; but provisions are dear, from the number of ships which refit and victual here. M. de Jong arrived at the Cape in November. The letters from the 4th to the 11th contain an interesting account of the colony, and a distressing picture of its situation in consequence of the war. He next describes some excursions into the internal parts, Simon's Bay, &c.

He sailed, on his return, the 19th of May 1795, and on the 20th of June anchored at the Isle of Ascension, of which he gives a particular description. He then directed his course to the coast of Norway, to avoid the English, and continued nearly two years at Drontheim and at Bergen, as the English vessels filled the North Sea. He is, consequently, enabled to describe the whole coast of Norway, and engages in some details on the constitution and present state of that country, on the manners of its inhabitants, mineral productions, statistics, and commerce.

Four plates illustrate this volume: the first representing Table Bay and Cape Town: the second, a view of Simon's Bay: the third, a sea insect, which the author found near Flores, one of the Azores, greatly resembling the glaucus flagellum of Forster: the fourth, the military exercises of the Norwegians.

DENMARK.

ART. 58.—*Anleitung zu einer verbesserten Schaafzucht.*

A new Method of breeding Sheep, and of the Management of Spanish Sheep in cold Climates. By M. Abildgaard and E. Vibourg. Translated from the Danish by E. Jensen. 8vo. Copenhagen.

We avail ourselves of the German translation, to announce this

important little work, which contains much valuable information. Though designed for higher latitudes, it contains numerous facts which will be highly useful in this country. We can only give an abstract of the contents.

We find, then, in this volume whatever relates to the natural history of sheep, *viz.* the difference of their instinct, dentition, and the period of their copulation. The authors next point out the characters of good wool, the difference of sheep-skins, the properties of the meat of different races; in what the fineness of the wool consists, and at what age the sheep is fit for propagation; with the hereditary defects of these animals, and the means of preventing their degeneration. In the last chapters they treat of the melioration of the Danish breed by the Friseland rams, and of the properties of the latter; of the Danish, Iceland, Ferrol, and other sheep; the melioration of the Danish sheep by the English breed; of their diseases, with the means of preventing and curing them.

ART. 59.—*Bemerkungen auf einer Reise durch das Sudlich Deutschland.*

Observations made during a Journey through the South of Germany, Alsace, and Switzerland, in the Years 1798 *and* 1799. *By M. d'Eggers.* 8*vo. Vol. II. and III.* Copenhagen.

We have already noticed the first volume of this work. The second contains the author's journey from Rastadt to Strasburg, with his observations on the present situation of the latter city, on Alsace, and the revolutions of Switzerland.

The best informed German travellers have observed, that M. Eggers seems not to have drawn his remarks from authentic sources. He sometimes, like a celebrated alderman of our own country, quotes his hair-dresser at Strasburg. Indeed, what he says of this city seems to be copied, in part, from the famous *Blue Book*, compiled by a printer, and partly from a description of Strasburg, published previous to the revolution, for Koenig. But we shall not enlarge on inaccuracies, which the author might have corrected by attending to the remarks of the most respectable journalists of Germany, which, however, he seems to have overlooked.

The third volume is not equally faulty. The description of the electorate of Baden and the Brisgaw is more important and interesting. The author staid longer at these places, and seems to have obtained better information. The last two letters of the volume contain the observations on Switzerland.

SWEDEN.

ART. 60.—*Practik Hand Lexicon foer Landhunshalase och Kostenarer.*

A practical Manual of Rural Œconomy and the Arts. Published by Olof Linderholm. Vol. I. A to. E. 8*vo.* Stockholm.

Sweden does not appear to be a country favourable to extensive works—*pendent opera interrupta;* at least we may form this opinion from the slow progress of the great Œconomical Dictionary of Fischerstroem (nya Suensk Economiska Dictionaire), of which, in twenty-four years, only two volumes have appeared,

terminating at the letter B. The present work, we trust, will proceed more rapidly.

On a general view, the author seems to have executed his proposed plan with ability. The articles are sufficiently full to give a correct idea of the objects, their properties, their use and preparation. Some of them are more extensive, particularly on alum, arsenic, ash, amber, balsam, bees, bread, bark, distillation, diamond, &c.

ART. 61.—*Svenska Krigsmanna Sallskassels Handlingar, for Aer* 1800.

Memoirs of the Swedish Military Academy for the Year 1800. Stockholm.

The Swedish military academy is composed of the king, its protector, eleven honorary and eighty active members. The volume before us, which is only the second, contains two memoirs, *viz.* Count Rumford's Attempt to determine the Force of Gunpowder, translated from the Philosophical Transactions for 1781, by Lieutenant-colonel Arrhenius; and Observations on the Regulations of the Exercise of the Swedish Army, by the Chevalier Doebeln. An abstract only of the last memoir is given, as the plates would render the publication of the whole too expensive.

ART. 62.—*Ulfoerlig Geographie foerfatted, &c.*

Complete Geography, by Dan. D'Jurberg; accompanied with a Supplement, and a Chart of the West Indies. Vol. I. Stockholm.

This author has already published many geographic works, and five charts, *viz.* two of Polynesia, one of France in four sheets, one of Asiatic Turkey, and one of the West Indies. This is, in reality, the first volume of a second edition; the first of which appeared in 1786, and was received with great respect. The first volume contains the cosmography and the general geography: the system of the world is explained at much greater length than in the first edition: and the author next considers this planet in its philosophic, mathematical, and geographic relations. The next subject of importance is the population of different countries. He gives Portugal 3,000,000 of inhabitants; Spain 11,000,000, France 33,000,000; Italy, without reckoning the Austrian possessions and Corsica, about 16,500,000; Germany, independent of the Austrian and Prussian states, 11,360,000; Austria about 25,000,000; Prussia 8,000,000; England 13,000,000; Denmark 2,500,000; Sweden 3,200,000; European Russia 35,000,000; and Turkey 10,000,000. He estimates the population of Europe at 180,000,000, of Asia 440,000,000, Africa 120,000,000, North America 25,000,000, South America 15,000,000, Polynesia 20,000,000; consequently, that of the whole world at about 800,000,000.

The political division of the earth follows; and at the end of the volume is a memoir on geogony, which ought to have been at the beginning: and under the title of Criticism we find numerous additions, and some account of the Piazzi, and other discoveries.

The supplement contains a particular description of Ceylon, Cuba, Jamaica, and St. Domingo, with a chart of the West Indies.

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ERRATA.

Page 199, line 5 from the bottom, *for* palace, *read* Castle.
370, 30, *for* espoused, *read* suspected.

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